



# National Energy Efficiency Registry Principles and Operating Rules

July 2017, Version 1.0



**NEER**  
NATIONAL ENERGY  
EFFICIENCY REGISTRY

To all interested parties:

Today, the National Energy Efficiency Registry (NEER) project partners - Tennessee, Georgia, Michigan, Minnesota, Oregon, Pennsylvania, The Climate Registry (TCR) and the National Association of State Energy Officials (NASEO), along with supporting organizations E4TheFuture and APX (together known as the Project Team) - are pleased to release the “NEER Principles and Operating Rules.”

The NEER Principles and Operating Rules are the critical foundation for the first-ever web-based platform that collects standardized energy efficiency data. It has been explicitly designed to empower states to reap the environmental, economic and health benefits of energy efficiency.

The Project Team has been working collaboratively on this document since 2015 in consultation with other states, the energy efficiency community and the public in order to define what the NEER will do and how it will work. In particular, we would like to thank the following organizations for their participation in the project’s Steering/Advisory Committee:

Advanced Energy Economy	National Rural Electric Cooperative Association
AJW	PJM
Edison Electric Institute	Synapse Energy Economics
Energy Platforms	Tennessee Valley Authority
Georgetown Climate Center	U.S. Department of Energy
Harvard Law School	U.S. Environmental Protection Agency
MN Municipal Utilities Association	Washington State University Energy Program

The Project Team looks forward to continuing to work together with all stakeholders to advance the NEER and increase investments in energy efficiency across the United States.

We thank for your interest in the NEER and for your ongoing contributions. For additional information on the NEER, please visit [www.NEERRegistry.org](http://www.NEERRegistry.org)

Sincerely,

The NEER Project Team



## Acknowledgements

The NEER Rules and Principles are the result of a collaborative effort. The NEER Project Team would like to thank the following government agencies, universities and organizations for contributing valuable insights and feedback.

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CLEAResult	Northeast Energy Efficiency Partnership
CTC Global	Regulatory Assistance Project
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Elevate Energy	Southeastern Energy Efficiency Association
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Home Performance Coalition	Sterling Planet
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## 2 Overview

The National Energy Efficiency Registry (NEER) is a web-based platform that documents achievement of state energy and environmental goals, discloses regulated entities' compliance activities, and drives voluntary investment in energy efficiency and energy and water conservation initiatives, by supporting the registration and tracking of Energy Efficiency Projects (EE Projects)<sup>1</sup> and issuing tradable instruments based on resulting savings. The NEER is flexible and can be tailored to suit evolving public policy goals and to track a range of benefits of EE Projects. It can be customized by each Client Jurisdiction and may be used for both compliance and non-compliance purposes.

The NEER is modeled on successful registries that track renewable energy credits and other Instruments.<sup>2</sup> It is designed to be transparent and in full compliance with identified evaluation measurement and verification (EM&V) plans and quality assurance/quality control (QA/QC) protocols. NEER users and the public can be confident in the quality and integrity of the registry's data because EE Projects, or Assets, are tracked from their creation through retirement, and reported energy savings (Asset Output) are calculated in a robust and transparent manner. A comprehensive archive of all

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<sup>1</sup> The NEER framework accommodates all types Distributed Energy Resources (DERs) projects including energy efficiency, demand response, distributed storage, and distributed generation. For simplicity, the term EE Projects will be used throughout this document.

<sup>2</sup> The NEER operates similarly to existing regional registries that serve multiple states for both Renewable Portfolio Standard (RPS) compliance and voluntary green power verification.

documents relevant to a particular Asset, such as EM&V plans, measurement and verification (M&V) reports, and QA/QC protocols, is maintained in the NEER.

The NEER is designed to accommodate all types of EE Projects, including but not limited to projects funded by: investor-owned utility (IOU) and public power ratepayer funded programs, property-assessed clean energy (PACE) initiatives, energy services contracts or other private investment vehicles, and public agencies, such as state and municipal governments.

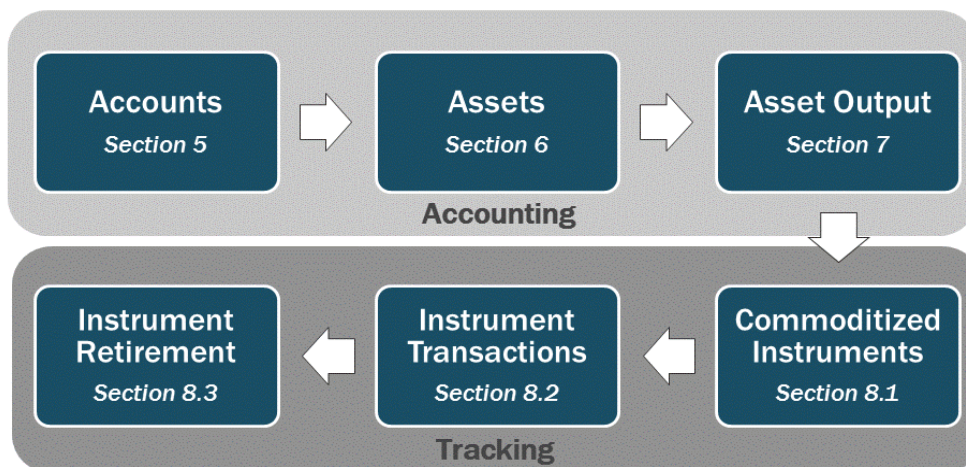
The NEER tracks performance of EE Projects in whole units, such as a MWh of avoided electricity. When an Asset Output meets a minimum threshold, the NEER generates a Certificate that documents all of the Asset Output's related Attributes, such as avoided emissions. For each unit of Asset Output, the NEER can create tradable Instruments that may be retired to demonstrate progress towards private or public energy and environmental goals, and/or compliance with state and federal environmental regulations. A Single Attribute Instrument can be designed for compliance with specific regulatory or voluntary programs. All Instruments are accounted for in the Asset's Certificate to safeguard against double counting and provide Client Jurisdictions and Account Holders (NEER-AHs) with assurances that support intra- and inter-state trading programs.

The NEER is not itself a trading platform. The NEER supports the transfer of Instruments between NEER-AHs, but transactions must be executed outside of the NEER. The NEER cannot be used to transfer funds between NEER-AHs, and all transaction terms and conditions, including price, should be negotiated and memorialized outside of the NEER. Parties to transactions direct the NEER Administrator (NEER-Admin), by mutual agreement, to transfer Instruments from the seller's Account to the buyer's Account. The NEER records these transfers and provides a complete chain of custody of all Instruments from creation to retirement.

For a complete list of Definitions and Abbreviations, see [Section 4](#).

This NEER workflow is presented below in Figure 1. More detail on each of these elements is provided in [Section 5](#) through [Section 8](#).

Figure 1





### 3 Principles

The NEER adheres to seven overarching principles. These principles underpin the design and development of the registry.

- **Flexibility:** Support a broad range of existing or potential public policies and Users.
- **Accuracy:** Ensure robust standard reporting methods for all Asset Output, with full disclosure of EM&V plans, M&V reports, QA/QC protocols and Accredited Independent Verifiers (AIV) credentials.
- **Accountability:** Provide a complete chain of custody for all tradable Instruments, from creation to retirement.
- **Comprehensive:** Track all Attributes associated with Asset Output of registered EE Projects.
- **Transparency:** Archive and allow appropriate access to all documents in order to support full disclosure of Asset and Asset Output information and, where relevant, document compliance with Client Jurisdiction standards.
- **Consistency:** Facilitate comparison of Assets and Asset Output across programs and Jurisdictions by providing comparable reporting tools and data QA/QC protocols.
- **Interoperability:** Maximize efficiency and reduce reporter burden by facilitating interoperability with other registries, tracking systems and existing documentation efforts.

The NEER also supports the principles associated with including EE as a pathway for Clean Air Act compliance, jointly adopted by the National Association of State Energy Officials (NASEO), National Association of Regulatory Utility Commissioners (NARUC) and National Association of Clean Air Agencies (NACAA) in May 2014. In addition to supporting an EE registry, these state leaders endorsed:

1. Recognition of ratepayer and non-ratepayer funded, end use and transmission and distribution system EE investments;
2. Recognition of existing EM&V protocols, including:
  - Model Energy Efficiency Program Impact Evaluation Guide issued by the State and Local Energy Efficiency (SEE) Action Network;
  - International Performance Measurement and Verification Protocol issued by the Efficiency Valuation Organization;
  - ASHRAE Guideline 14-2002 Measurement of Energy and Demand Savings;
  - Superior Energy Performance Measurement and Verification Protocol for Industry;
  - Department of Energy (DOE) Uniform Methods Project protocols;
  - Technical Reference Manuals (TRMs) developed and/or adopted by states, utilities and regional bodies such as the Northwest Power and Conservation Council Regional Technical Forum (RTF) and the Northeast Energy Efficiency Partnerships (NEEP) EM&V Forum;
  - Other SEE Action Network and regional products; and,
  - Other modeling and/or statistical approaches.
3. Avoiding double counting; and,
4. Supporting multi-state or regional efficiency programs.

### 4 Definitions and Abbreviations

1. **Account:** An Account in the NEER contains NEER Account Holder information, Asset information and information about Instrument management. Accounts in the NEER also contain information about the Account Users who have been granted access to that Account.



2. **Account Holder Identification Number (NEER-AH ID Number):** The number issued by the NEER Administrator to the Account Holder upon completion of the Account Application. Any Sub-Accounts within an Account list the NEER Account Holder Identification Number with a numeric suffix to specify the Sub-Account.
3. **Account Types:**
  - a. **General:** This type of Account has the potential to support all functionality. Assets can be registered, held, transferred (within the NEER), and imported/exported, and Instruments can be retired in this type of Account.
  - b. **Asset-only:** This type of Account is registered by an Energy Efficiency Provider that is only intending to track Asset Outputs. Instruments can be produced for Assets in this account but it cannot receive, import or hold Instruments associated with other Assets. This Account can hold, withdraw, make outgoing transfers and retire Instruments associated with Assets it has registered.
  - c. **Restricted:** This type of Account can monitor, approve, enter data for and/or verify certain information. Restricted Accounts may not register or hold Assets or Instruments. This account may be used by Verifiers and Client Jurisdictions.
4. **Account User:** Any party that has been granted access to an Account by the NEER Account Holder, Authorized Account Representative or Alternate-Authorized Account Representative. Account Users may be granted "Primary" permission, which allows them to view information, perform transactions and change personal information; or "View Only" permission, which limits use to viewing information. The Authorized Account Representative may at any time revoke the permissions it granted to an Account User by notifying the NEER Administrator. The NEER tracks the specific activities of each Account User through their unique login and password.
5. **Active Sub-Account:** The first point of deposit for Instruments created for or transferred to a NEER Account Holder, and the holding place for all active Instruments. An Active Sub-Account may be associated with one or more Assets.
6. **Accredited Independent Verifier (AIV):** A person or entity hired by a Client Jurisdiction, Energy Efficiency Provider, Specific Compliance/Certificate Program Administrator and/or the NEER Administrator to perform verification duties. These duties could include assessing baseline conditions, confirming that energy efficiency measures are operating according to their specifications, and confirming post-implementation Asset Output. Site inspections, follow-up surveys, and desk review of program documentation are typical verification activities. An Accredited Independent Verifier may also serve in the role of a Qualified Reporting Entity.
7. **American Arbitration Association:** A national organization that promotes the use of arbitration to resolve commercial and labor disputes. It also maintains a panel of arbitrators for those who wish to utilize their services.
8. **Asset:** Either (a) a single energy efficiency project, program or measure, or (b) an aggregation of projects, programs or measures, which are treated as a single resource with one identification number; one set of Asset registration documentation; and one avoided value for the Asset Output type reported. Assets are contained in an Energy Efficiency Provider's Account.
9. **Asset Output:** The avoided electric or non-electric energy, water, and/or electric capacity of an Asset for a specific output Vintage.
10. **Asset Output Log:** An electronic ledger for posting energy savings prior to Instrument creation. Each time energy savings data is received or adjusted by the NEER Administrator for a particular Asset, the date and quantity is posted to the Asset Output Log.
11. **Asset Output Report:** A generated report that displays the avoided electric or non-electric energy, water, and/or electric capacity an Asset, sorted by Vintage.
12. **Authorized Account Representative (AAR):** An individual certified through the NEER Authorized Account Representative/Alternate-Authorized Account Representative Certification process ([Appendix 5.3.1 \[a\]](#)) The Authorized Account Representative has permission to act on behalf of the NEER Account Holder. Actions may include, but are not limited to, registrations, transactions, data submission and QA/QC, and management of Account User permissions and logins.

13. **Alternate Authorized Account Representative (Alternate-AAR):** An individual who may act on behalf of the Authorized Account Representative. *See Authorized Account Representative (AAR).*
14. **Attributes:** All credits, benefits, emissions reductions, offsets, and allowances that are attributable to the Output of an Asset.
15. **Business Confidential Report:** A report containing business confidential information, (e.g., street addresses of Assets), that must be disclosed to the NEER Administrator and certain Client Jurisdictions but is not publicly reported.
16. **Certificate:** A general-purpose, uniquely numbered Instrument documenting all Attributes of one Unit of Asset Output by Vintage (e.g., a NEER Certificate).
17. **Client Jurisdiction:** A jurisdiction, private entity or non-governmental organization that has entered into an agreement for NEER services, which may include a contract for the use of the registry for one or more Specific Compliance/Certification Programs, or for services to the jurisdiction.
18. **Compatible Tracking System:** A tracking system that has an operating agreement with the NEER regarding the conversion and transfer of Instruments between tracking systems. Instrument conversions and transfers cannot occur until the NEER Administrator and the administrator of the other tracking system develop a protocol for converting Instruments from another tracking system into Instruments suitable for the NEER.
19. **Dispute Resolution:** Administrative process to resolve disputes regarding NEER functionality and actions including, but not limited to, disputes related to attestations, approval or rejection of data by the NEER Administrator, suspicions of double counting or false information, and any other matter impacting the accuracy and transparency of information submitted and/or contained in the NEER.
20. **DOE:** U.S. Department of Energy.
21. **Dynamic Data:** Information associated with Asset Output that varies from one reporting period to another, including the quantity of Output, Vintage, and Instrument Serial Numbers.
22. **Energy Efficiency Market Participant (EE Market Participant):** A NEER Account Holder that is not an Energy Efficiency Provider but may purchase Single Attribute Instruments and NEER Certificates. These participants will hold a General Account within the NEER.
23. **Energy Efficiency Project (EE Project):** An energy efficiency project, program or measure and other distributed energy resources, which provides one or more of the Asset Outputs tracked in the NEER (e.g., avoided MWh, MW, MBTUs or gallons of water).
24. **Energy Efficiency Provider (EE Provider):** An entity that has full ownership of all Attributes associated with an Energy Efficiency Project, and that has the ability to adequately measure and report Asset Output from an Energy Efficiency Project. The Energy Efficiency Provider may be the property owner, a party that has acquired ownership rights from the property owner, and/or an aggregator. Only an Energy Efficiency Provider may register an Asset.
25. **EPA:** U.S. Environmental Protection Agency.
26. **EM&V:** Evaluation, Measurement and Verification.
27. **Implementation period:** The specified period of time relating to a particular phase of an EE Project's implementation where Asset Output will be reported.
28. **Instrument:** A legal electronic document representing one or more Attributes associated with one Unit of Asset Output in a particular Vintage (e.g., a Certificate or a Single Attribute Instrument).
29. **Instrument Transfer:** The process in which an Instrument or batch of Instruments is moved from one Account Holder's Active Sub-Account to another Active Sub-Account held by the same NEER Account Holder, or to the Active Sub-Account of another Account Holder.
30. **M&V:** Measurement and Verification.
31. **Measure life:** A key parameter in an Evaluation, Measurement & Verification plan, often drawn from Technical Resource Manuals. It describes the number of years that an Asset is expected to garner Asset Output that will result in the creation of Instruments. An Asset will be expected to report Asset Output for each Vintage of the measure life.
32. **Megawatt-hour (MWh):** One thousand kilowatt-hours or one million watt-hours.

33. **One Million British Thermal Units (MBTU):** One million British Thermal Units. A BTU is a measure of the energy content in fuel.
34. **Megawatt (MW):** One million watts.
35. **Gallon (Gal.):** Unit of volume for liquid measure equal to four quarts.
36. **NASEO:** National Association of State Energy Officials.
37. **NARUC:** National Association of Regulatory Utility Commissioners.
38. **NACAA:** National Association of Clean Air Agencies.
39. **NEER Account Holder (NEER-AH):** An entity or individual registered as a participant in the NEER that has agreed to the Terms of Use ([Appendix 4.1](#)). Entities that may be Account Holders include, but are not limited to, Energy Efficiency Providers, Voluntary Buyers, Compliance Entities, Jurisdictions, Specific Compliance/Certification Program Administrators, Accredited Independent Verifiers and Qualified Reporting Entities.
40. **NEER Administrator (NEER-Admin):** The entity with the authority to administer and/or oversee the administration and implementation of the NEER Operating Rules.
41. **NEER Asset Identification Number (NEER Asset ID Number):** The number assigned to each Asset registered in the NEER. The NEER Asset Identification Number appears on any Instruments created based on the Asset's output.
42. **NEER Governing Body (NEER-GB):** The entity that oversees governance of the NEER, with responsibility for the overall strategy and governance of the NEER and the ongoing review of the vision and mission of the NEER. See [Appendix 4.3](#) covering the NEER Governance Charter.
43. **Qualified Reporting Entity (QRE):** An entity reporting Asset Output data to the NEER Administrator, consistent with the Qualified Reporting Entity Guidelines ([Appendix 4.2](#)). Qualified Reporting Entities must have a signed agreement with the NEER Administrator. Qualified Reporting Entities include, but are not limited to, balancing authorities, electric service providers, public utility commissions, interconnecting utilities, scheduling coordinators, independent third-party meter readers, and Accredited Independent Verifiers.
44. **Reporting Period:** One or more periods of time within an EE Project's implementation period when Asset Output is reported in the NEER.
45. **Retired Instrument:** An Instrument that has been removed from circulation and can no longer be traded or sold, and whose Attributes have been permanently claimed.
46. **Retirement Sub-Account:** A Sub-Account used as a repository for Instruments that a NEER Account Holder wishes to designate as retired and remove from circulation. Once an Instrument has been transferred into a Retirement Sub-Account, it cannot be transferred again to any other Account, except under limited circumstances (See [Section 8.3.2](#) on retirement withdrawal).
47. **RPS:** Renewable Portfolio Standard.
48. **Serial Number:** The code that identifies an Instrument and its key information.
49. **Single Attribute Instrument:** A single-purpose, uniquely numbered Instrument representing a single Specific Compliance/Certification Program Attribute of one Unit of Asset Output, for the purpose of showing compliance or participation with a Specific Compliance/Certification Program (e.g., Emission Reduction Credits or Allowances).
50. **Specific Compliance/Certification Program (SCCP):** A compliance or voluntary certification program implemented by a Jurisdiction, private entity or a non-governmental organization.
51. **SCCP Administrator:** The entity – typically, a jurisdiction or non-governmental organization – with the authority to administer, or oversee the administration and implementation of, a Specific Compliance/Certification Program. This oversight could include the ability to assess participants' qualifications and to establish issuance rules, regulations or guidance. The Specific Compliance/Certification Program Administrator is responsible for (a) issuing Specific Compliance/Certification Program Identification number(s) to all qualified Assets, (b) certifying that each Asset Output Report has met the Specific Compliance/Certification Program issuance rules, and (c) authorizing the NEER to create Instruments that will be accepted as evidence of compliance with the Specific Compliance/Certification Program.

- 52. **SCCP Attribute:** The specific Attribute, (e.g., NO<sub>x</sub> emissions avoided) which would be used as documentation for compliance or voluntary participation with a given regulation, rule, policy, or program. The Specific Compliance/Certification Program Administrator must issue a Specific Compliance/Certification Program Identification Number for these attributes to receive Single Attribute Instruments in the NEER.
- 53. **SCCP Identification Number (ID number):** A number issued by the Specific Compliance/Certification Program Administrator that identifies the Asset in the program. An Asset may be associated with more than one Specific Compliance/Certification Program Identification Number if it is being used to comply with multiple certifications and programs.
- 54. **Static Data:** Information that describes the fixed characteristics of the Asset, such as technology type, ownership or location.
- 55. **Sub-Account:** *See Active and Retirement Sub-Account definitions.*
- 56. **Terminated Asset (or Asset Termination):** An Asset that has been permanently removed from the NEER, either by the NEER Account Holder or by the NEER Administrator, with just cause.
- 57. **Unit of Asset Output:** Standard unit of measure for commoditization of Asset Output, such as megawatt-hour (MWh) of electrical energy, megawatt (MW) of electrical capacity, million British thermal units (MBTU) of direct fossil fuel combustion, or tons of emissions.
- 58. **Vintage:** The time period (month and year) in which Asset Output occurred.
- 59. **Vintage Creation Date:** The date upon which Asset Output was assigned to a NEER Instrument.

## 5 Accounts

### 5.1 Accounts and Sub-Accounts

The NEER includes three primary Account Types: General, Asset-only and Restricted.

General Account Holders have access to all of the NEER's functionality. Asset-only Accounts only allow the Account Holder (NEER-AH) to register Assets; hold, withdraw, and make outgoing transfers; and retire Instruments associated exclusively with those Assets. General Accounts and Asset-only Accounts are the only Account Types that can hold Assets. Static Data and the Asset Output Log are also contained in these Accounts.

When a General or Asset-only Account is created in the system, a single default Retirement Sub-Account and a single default Active Sub-Account are created automatically to house any generated Instruments associated with the NEER-AH's Asset(s). Additional Active and Retirement Sub-Accounts may be created to meet the NEER-AH's individual needs.

Each NEER-AH has an Account Holder Identification Number (NEER-AH ID Number) for their Account, and any Sub-Accounts list the NEER-AH ID Number with a numeric suffix unique to that Sub-Account. This way, Instruments may easily be deposited into the appropriate location.

Restricted Accounts include Verifier, Jurisdiction and NEER Administrator Accounts. Restricted Account Holders monitor, approve and enter data and/or verify certain information. They cannot hold Assets or Instruments in their accounts.

For information on Account structure, see Figure 2. For information on the functionality available to each type of Account Holder, see Figure 3. For additional information on the types of entities that might hold certain Accounts Types, see Figure 4 below.

Figure 2

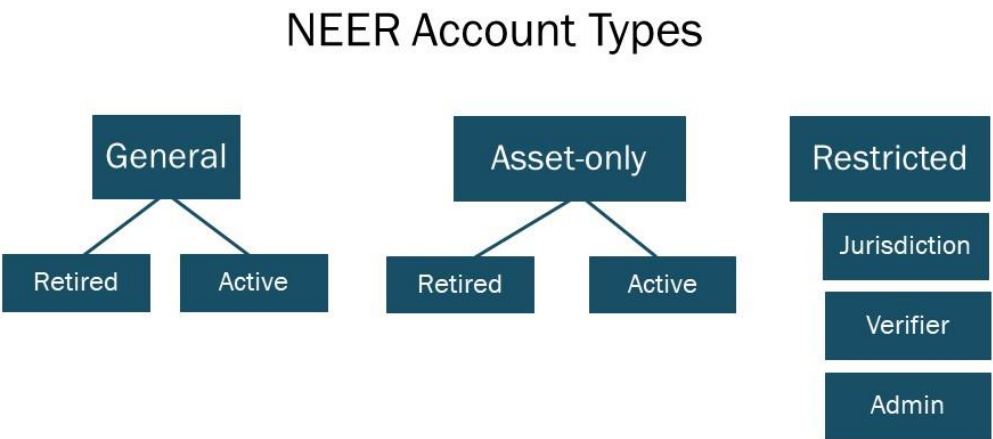


Figure 3

**Functionality Available by Account Type**

Type of Account	Can hold Assets or Instruments	Can Enter Data	Can Monitor Data	Can Approve Data
General	✓	✓	✓	✓
Asset-only	✓	✓		
Restricted		✓	✓	✓

Figure 4

## Illustrative Examples of NEER Accounts, Roles and Entities

NEER Account Types	NEER Roles							Industry Player				
	EE Provider	EE Market Participant	Independent Accredited Verifier	Qualified Reporting Entity	SCCP Administrator	Client Jurisdiction	NEER Administrator	Utility	ESCO	Broker	Balancing Authority	Public Utility Commission
General												
Asset-only												
Verifier												
Jurisdiction												
Admin												

Represents a range of likely Account Type options that individual entities might consider.

### 5.1.1 Account Types

#### 5.1.1.1 General Account

General Account Holders can register Assets and hold, transfer (within the NEER), import/export and retire Instruments. General Accounts are opened by any entity approved by the NEER Administrator (NEER-Admin) to perform multiple roles within the NEER, e.g., a utility that registers in the NEER as both a Qualified Reporting Entity (QRE) and an Energy Efficiency Provider (EE Provider), or a Client Jurisdiction that is also an EE Provider. General Account Holders that wish to hold multiple roles in the NEER must demonstrate their eligibility for the requested role(s) in their Account Application ([Appendix 5.1.1.1](#)).

Figure 5 below shows how a General Account might appear for a NEER Account Holder (NEER-AH) with both Assets and Instruments.

Figure 5

## General Account Settings

(Example shows Asset Information and Instrument Management Options switched on)

<b>Account Profile</b> 1. Account Holder Name: 2. Account Holder Address: 3. Link to <a href="#">Approved Account Application</a> : 4. Link to <a href="#">Viewable Reports</a>		
<b>Asset Information</b>		
<b>Asset 1</b> - Static Information - <a href="#">Asset Output Log</a>	<b>Asset 2</b> - Static Information - <a href="#">Asset Output Log</a>	<b>Asset 3</b> - Static Information - <a href="#">Asset Output Log</a>
<input checked="" type="checkbox"/> ON		
<b>Instrument Management</b>		
<b>Active Sub-account</b> Instruments created/ stored/transferred here	<b>Retirement Sub-Account</b> Instruments no longer in circulation. Retired for voluntary or compliance purposes	<input checked="" type="checkbox"/> ON
<b>Verifier Options</b>		
<b>Qualified Reporting Entity Settings</b> <a href="#">Asset Output Data Filing</a>	<input type="checkbox"/> OFF	<b>Accredited Independent Verifier Settings</b> <a href="#">Verification Reports</a>
<input type="checkbox"/> OFF		
<b>Jurisdiction Options</b>		
<b>Asset and Instrument Documents</b> <a href="#">Approved Documents</a> <a href="#">Documents Pending Approval</a> <a href="#">Rejected Documents</a>		
<input type="checkbox"/> OFF		

Settings are turned on or off in the General Account based on the role(s) of the NEER-AH. Settings that are turned off will not be accessible to the NEER-AH.

### 5.1.1.2 Asset-only Account

Asset-only Accounts can be opened by EE Providers who intend only to register EE Projects as Assets. These Accounts allow EE Providers to submit Asset Output Reports, populate the Asset Output Log and receive Instruments corresponding to Asset Output. An Asset-only Account can hold, withdraw, make outgoing transfers and retire Instruments. Asset-only Accounts also can export Instruments to different registries. Asset-only Accounts cannot receive transfers or imports from other entities.

Figure 6 below, shows the information available to a NEER-AH with an Asset-only Account.



Figure 6

## Asset-only Account Settings

**Account Profile**

1. Account Holder Name:
2. Account Holder Address:
3. Link to [Approved Account Application](#):
4. Link to [Viewable Reports](#)

**Asset Information**

Asset 1	Asset 2	Asset 3
- Static Information	- Static Information	- Static Information
- <a href="#">Asset Output Log</a>	- <a href="#">Asset Output Log</a>	- <a href="#">Asset Output Log</a>

**Instrument Management**

Active Sub-account (EXPORT ONLY)	Retirement Sub-Account (INTERNAL ONLY)
Instruments created/stored/transferred here	Instruments no longer in circulation. Retired for voluntary or compliance purposes

### 5.1.1.3 Restricted Accounts

#### 5.1.1.3.1 Verifier Account

A NEER-AH with a Verifier Account may be an Accredited Independent Verifier (AIV) accredited by the NEER or at least one Client Jurisdiction to perform qualification and verification tasks or a Qualified Reporting Entity (QRE) reporting Asset Output data to the NEER-Admin, consistent with the Qualified Reporting Entity Guidelines ([Appendix 4.2](#)). Capabilities of the NEER-AH within the Verifier Account are determined during the creation of the account, and based on whether the entity is an AIV performing qualification and verification duties, an AIV performing QRE duties, or another entity performing QRE duties. The Verifier Account cannot hold Instruments.

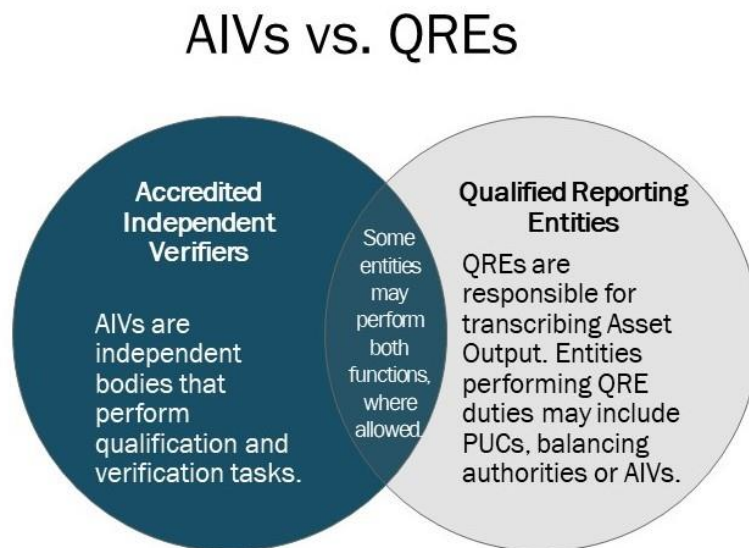
AIVs with a Verifier Account in the NEER can perform project verification duties in the registry. AIVs can assess the information and data submitted by EE Providers or QREs - as well as all supporting information and data identified in the EM&V plan and M&V report - for accuracy, completeness and conformance with the regulatory or program requirements. AIVs can assess baseline conditions, confirm that EE measures are operating per their specifications, and confirm post-implementation Asset Output. AIVs with a Verifier Account have the ability to review program documentation.

An entity acting as QRE that has a Verifier Account is responsible for entering Dynamic Data into the Asset Output Log. Entities performing QRE duties that may hold a Verifier Account include AIVs, Public Utility Commissions (PUCs), utilities and balancing authorities. The NEER-Admin ensures that all QREs are suitably qualified and accredited.

If a QRE is a utility, the utility must demonstrate its eligibility for its roles within the NEER as required in the Terms of Use ([Appendix 4.1](#)). In the case where a utility wishes to act as both a QRE and as an EE Provider, the utility should open a General Account.

Figure 7 below shows the roles and responsibilities of AIVs and QREs.

Figure 7



#### 5.1.1.3.2 Jurisdiction Account

Jurisdiction Accounts are provided to (a) Client Jurisdictions, and (b) their Specific Compliance/Certification Program Administrator(s) (SCCP Administrator) (if applicable) that utilize the NEER. This Account allows Client Jurisdictions to access documents or Business Confidential Reports that demonstrate compliance and eligibility. Reports are generated by the NEER-Admin with the permission of the NEER-AH.

Asset details are only visible to a Jurisdiction Account if the EE Provider registering that Asset has listed it as subject to that Jurisdiction's regulations or requirements.

#### 5.1.1.3.3 NEER Administrator Account

A NEER Administrator Account is provided to the NEER-Admin and allows full access to all NEER capabilities. There is only one NEER Administrator Account.

### 5.1.2 Sub-Accounts

Both General Accounts and Asset-only Accounts in the NEER may contain one or more Active Sub-Account(s), and one or more Retirement Sub-Account(s). Instrument deposits and transfers take place within these Sub-Accounts, although Instruments cannot be withdrawn from a Retirement Sub-Account, except under very limited circumstances. See [Section 8](#) on *Instrument Transactions* for more details.

#### 5.1.2.1 Active Sub-Account

1. Active Sub-Account(s) are the first point of Instrument deposit and the holding place for all active Instruments associated with the NEER-AH's Asset Output, or Instruments transferred from other accounts

or registries. The Instruments held here can be transferred and otherwise transacted at the discretion of the NEER-AH.

NEER-AHs may view and sort their Instruments in the Active Sub-Account(s) by Instrument data fields and generate reports about their Account. For information about reports a NEER-AH may generate, see [Section 9.1.1](#).

2. Deposits of Instruments into the Active Sub-Account may occur by:

- a. *Creation*: Instruments are deposited in an EE Provider's Active Sub-Account by the NEER-Admin.
- b. *Intra-Account Transfers*: Instruments are transferred to another Active Sub-Account within the NEER-AH's own Account.
- c. *Inter-Account Transfers*: Instruments are transferred after mutual agreement from another NEER-AH. *This can only occur in a General Account.*
- d. *Import*: Instruments are deposited into the Active Sub-Account by the NEER-Admin as a result of an import from another Compatible Tracking System. *This can only occur in a General Account.*

3. Withdrawal or removal of Instruments from an Active Sub-Account may occur by:

- a. *Intra-Account Transfers*: Instruments are transferred to another Active Sub-Account within the NEER-AH's own Account.
- b. *Inter-Account Transfers*: Instruments are transferred to another NEER-AH's General Active Sub-Account.
- c. *Export*: Instruments are exported out of the NEER into another Compatible Tracking System.
- d. *Retirement*: Instruments are transferred into the NEER-AH's own Retirement Sub-Account(s).

#### 5.1.2.2 Retirement Sub-Account

A Retirement Sub-Account is used as a repository when a NEER-AH makes a permanent ownership claim on the Attributes represented by an Instrument. A NEER-AH may create more than one Retirement Sub-Account, if desired.

A NEER-AH may transfer Instruments from an Active Sub-Account to a Retirement Sub-Account within their General Account or Asset-only Account, or may accept a transfer of Instruments from another NEER-AH directly into their Retirement Sub-Account.

When an Instrument is retired, the NEER-AH must select a reason for Instrument retirement from a drop-down menu of options ([Appendix 5.1.2.2](#)). The retirement options are consistent with Client Jurisdiction regulatory programs, as well as voluntary programs or voluntary market activities that are added by the NEER-Admin. Once a reason for retirement is selected, it cannot be changed.

Once deposited into a Retirement Sub-Account, Instruments can no longer be traded or sold. The NEER-Admin has the right, but not the duty, to withdraw Instruments from a NEER-AH's Retirement Sub-Account that were placed there in error. See [Section 8.3.2](#) for more information.

The Retirement Sub-Account(s) show the NEER Asset ID Number of the Instruments retired, the date of retirement and the reason for retirement. Once Instruments are retired, only under very limited circumstances may they be moved or transferred out of the Retirement Sub-Account(s) to any other Account or NEER-AH.<sup>3</sup> A NEER report of a Retirement Sub-Account status may be used as documentation to show compliance with an SCCP.

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<sup>3</sup> See [Section 8.3.2](#) for limited circumstances where withdrawal from a Retirement Sub-Account may occur.

## 5.2 Account Registration

The first step to registering in the NEER is to establish one of the three Account Types described above. Each NEER-AH may have only one Account. In the Account Registration process, the NEER-AH must designate one individual to act as the Account's Authorized Account Representative (AAR) and another to be the Alternate-Authorized Account Representative (Alternate-AAR). See [Section 5.3](#) for more information on AARs and Alternate-AARs.

### 5.2.1 Participation Guidelines

Participation in the NEER is voluntary, although some certification and compliance programs may require participation in the NEER for their own programs. Entities registering for an Account must agree to the Terms of Use ([Appendix 4.1](#)).

### 5.2.2 Account Registration

To establish an Account, registrants submit a completed online Account Application ([Appendix 5.1.1.1](#)). The NEER-Admin reviews the Account Application and may request more information before it issues a decision. Account Application registrants may seek Dispute Resolution if their application is not successful. See [Section 11](#) for more details on NEER Dispute Resolution. Once the Account is established, the NEER-AH listed on the Account Application becomes the NEER-AH for that Account.

### 5.2.3 Terminating an Account

Account termination can be initiated by the NEER-AH by notifying the NEER-Admin. The NEER-Admin can also terminate an Account if a NEER-AH is in default under the Terms of Use ([Appendix 4.1](#)). Account termination may result in future participation in the NEER being limited. Reference the Terms of Use ([Appendix 4.1](#)) for more information.

## 5.3 Access to Accounts and Confidentiality

### 5.3.1 Certifying Authorized Account Representatives

During Account registration, the registrant completes an online AAR/Alternate-AAR Application ([Appendix 5.3.1 \[a\]](#)). In order to change the individual with AAR or Alternate-AAR privileges, the NEER-AH must submit an AAR/Alternate-AAR Application Modification ([Appendix 5.3.1 \[b\]](#)).

The NEER-AH has sole discretion in designating individuals to serve as the AAR and Alternate-AAR, and accepts full liability for all AAR and Alternate-AAR actions. Neither a Client Jurisdiction nor the NEER-Admin have the right to, nor be obligated to, review or evaluate the sufficiency of these designations.

### 5.3.2 Account Access

Each Account has one approved individual who serves as the AAR, and one individual who serves as the Alternate-AAR that may act in lieu of the AAR.

AARs/Alternate-AARs are responsible for assigning login permissions for Account Users. Account Users may be assigned view-only access to information or may be given permission for additional activities, such as performing transfers and submitting/updating information. These privileges can also be attached to specific Sub-Accounts or Assets. This provides AARs and Alternate-AARs with significant flexibility when assigning login permissions for Account Users.

Account User logins and permissions can be set up during the Account registration process, or at any time that the AAR or Alternate-AAR wishes to add Users to the Account. The AAR or Alternate-AAR will supply contact information for each login, designate the login name and password, and configure access

privileges. For further information regarding Account set up, registration, and permissions, see the NEER User Guide ([Appendix 5.3.2](#)).

The NEER-Admin retains the right to update information, add Account Users and access Account information.

### **5.3.3 Updating Information and Adding Account Users**

The AAR and Alternate-AAR are responsible for setting up any additional Users and managing all User login privileges for the NEER-AH's Account.

### **5.3.4 Account User Types and Levels of Account Access**

When an AAR or Alternate-AAR creates new Users, they assign one of two levels of specific access rights: "Primary User" or "View-Only User."

#### **5.3.4.1 Primary User**

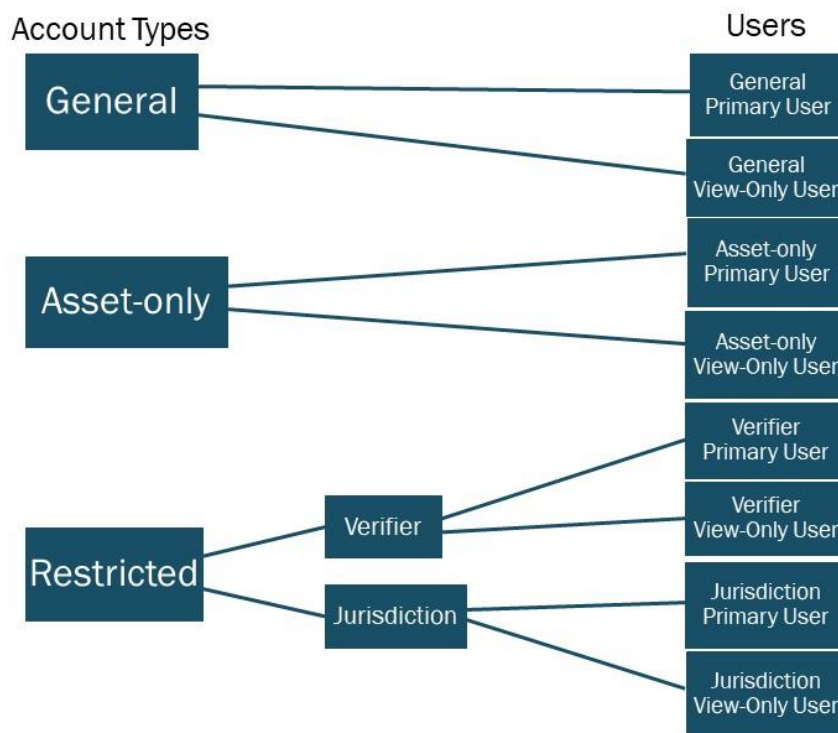
When completing or updating an Account User profile, the AAR or Alternate-AAR may assign some or all of the "Primary User" privileges dependent on the Account Type, including Asset registration, Instrument management, initiation and acceptance of transfers into and out of Active Sub-Accounts, and/or Instrument retirement. The AAR or Alternate-AAR may assign one or more Primary Users access to their Account.

#### **5.3.4.2 View-Only User**

When completing or updating an Account User profile, the AAR or Alternate-AAR can assign "View-Only User" privileges. This provides the Account User with limited view rights, e.g., the SCCP Administrator grants a co-worker "View-Only User" privileges because they will need to run reports, but the Program Administrator wants to limit who can change information. The AAR or Alternate-AAR identifies the specific Accounts, Sub-Accounts and Instruments that the Account User can access and view. The AAR or Alternate-AAR may assign one or more View-Only Users access to their Account.

Figure 8

## Account Users by Account Type



### 5.3.5 Confidentiality

As stated in the Privacy Policy ([Appendix 5.3.5](#)) and the Terms of Use ([Appendix 4.1](#)), certain Account information is held as business confidential information at the request of the NEER-AH. An SCCP Asset Application Addendum ([Appendix 6.5.1.5](#)) may stipulate further information that may or may not be held confidential for Assets registered to comply with the SCCP. Business confidential information will only be used and released in aggregate through the public reporting process (see [Section 9.1.2](#)).

### 5.4 Participation Fees

See the NEER Fee Schedule ([Appendix 5.4](#)).

## 6 Assets

An Asset is a single EE project, program or measure, or an aggregation of projects, programs or measures that is treated as a single resource. A single Account can have multiple Assets, but each Asset can only be associated with one Account.

An EE Provider seeking to report Asset Output and/or receive Instruments created within the NEER must (a) become a NEER-AH by establishing an Account (see [Section 5](#)) within the NEER software, and then (b) register the EE Project as an Asset. Note: registration with the NEER does not imply or confer acceptance into, or eligibility for, any voluntary or certification program.

## 6.1 Registering an Asset

An EE Provider must submit a completed online Asset Application to the NEER-Admin through a secure portal on the NEER website. An AIV may be required to complete components of the Application, including signing attestations (see below). The NEER-Admin reviews the Asset Application and may request more information before it issues a decision at its sole discretion. Asset Application registrants may seek Dispute Resolution if their application is not successful. See [Section 11](#) for more details on NEER Dispute Resolution. Asset(s) remain active until terminated. The NEER-Admin must review a complete Asset Application within 90 days of submission.

### 6.1.1 Static Data Reporting, Verification and Certification

#### 6.1.1.1 Static Data Reporting

Static Instrument Data<sup>4</sup> consists of key data fields, attestations and certifications referenced in an Asset Application that does not change from one Vintage period to another. Some examples of Static Data include the NEER-AH name, Asset location (state), and initial date of Asset operation. The NEER-AH must notify the NEER-Admin if any changes need to be made to Static Data (following Asset registration in the NEER) by completing an online Static Data Modification Request no more than thirty (30) calendar days after the change occurs. Failure to report changes that result in inaccurate information being included in a created Instrument may be considered failure to uphold the NEER Terms of Use agreement. See [Appendix 4.1](#) for details.

#### 6.1.1.2 Static Data QA/QC

Static Data QA/QC has three components: the registration documents, the registration QA/QC procedural steps and the overall workflow process. Within each of these components, a common set of possible Static Data QA/QC modules are provided in order to minimize duplication of efforts and promote standardization and transparency.

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<sup>4</sup> Static Data may be known in some industries as meta data.



Figure 9

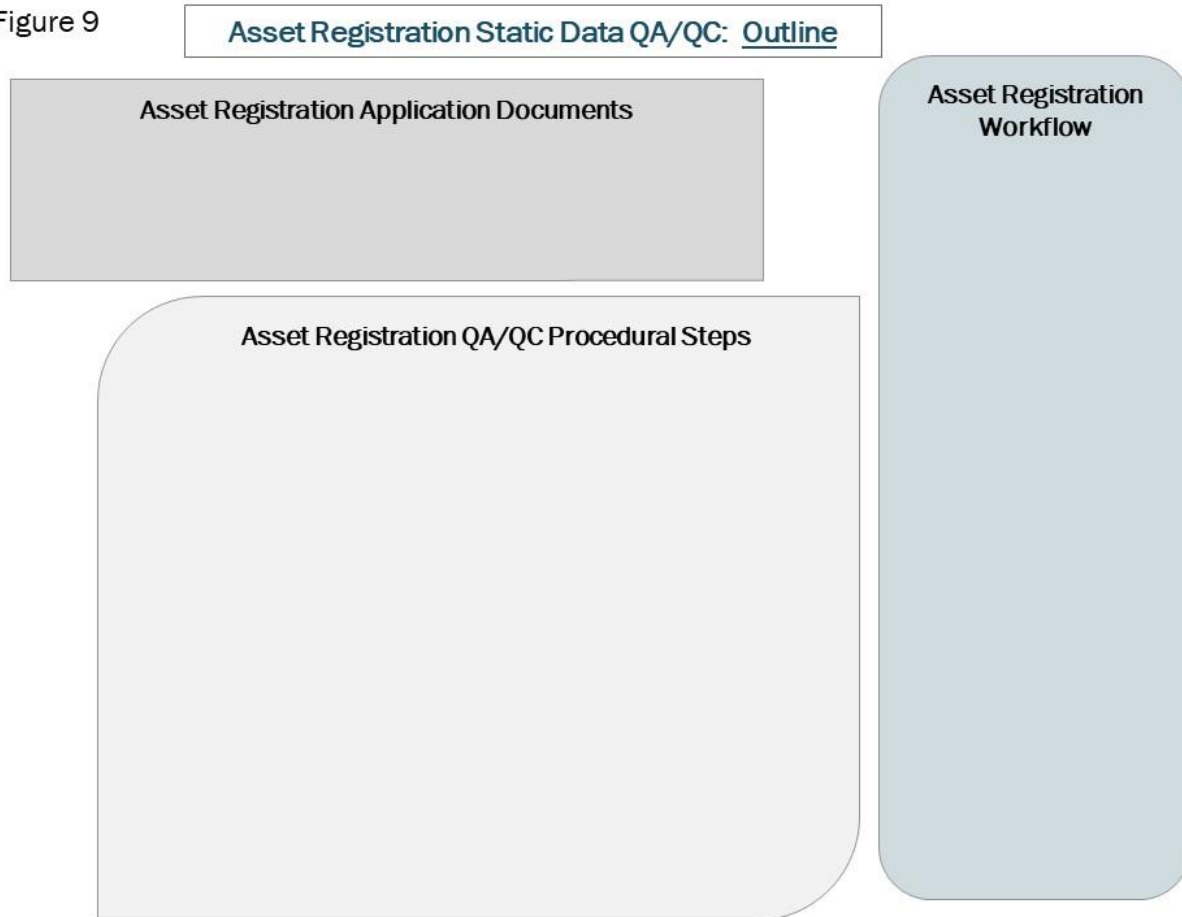
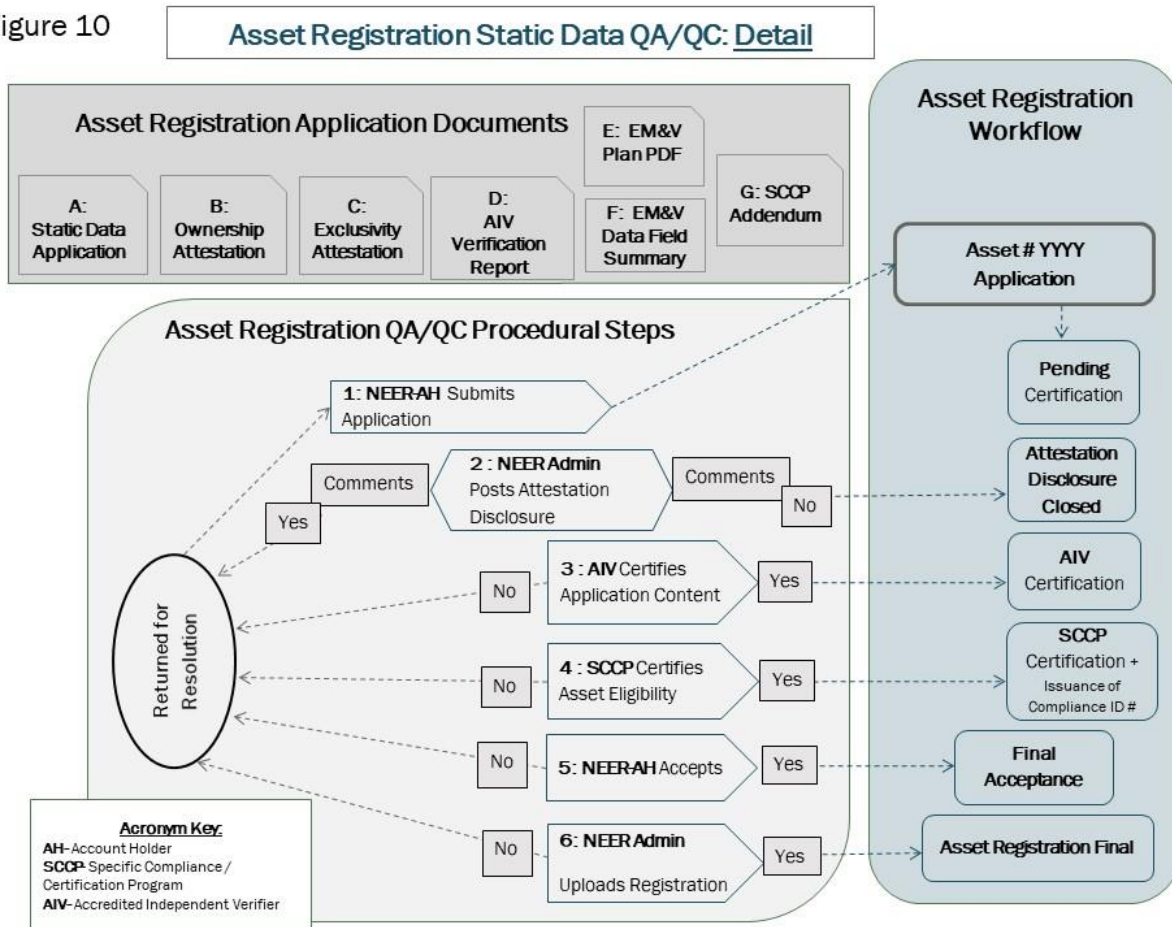


Figure 9 above illustrates the three Static Data QA/QC components, while Figure 10 below illustrates proposed modules within each component.

Figure 10



The NEER Static Data QA/QC Module Guidelines ([Appendix 6.1.1.2 \[a\]](#)) provide detailed descriptions of modules, the documents, tasks, roles and responsibilities, permissions, timelines and notifications involved with each step. These guidelines also describe how a NEER-AH may propose the creation of new Static Data QA/QC modules.

SCCP Administrators define which modules to include in their SCCPs' QA/QC protocols. Custom requirements can be described in that SCCPs' Asset Application Addendum ([Appendix 6.5.1.5](#)).

The NEER Governing Body (NEER-GB) oversees two self-reporting QA/QC protocols: NEER Basic and NEER Enhanced, which will have the following Static Data QA/QC requirements:

**NEER Basic:** This option does not include filling out an EM&V plan or any third-party verification of data. The EE Provider fully discloses that Asset Output is self-reported, is not verified and will not be used as the basis for the creation of any Instruments. See Figure 11.

**NEER Enhanced:** This option requires (a) an EM&V plan that is certified by an AIV as meeting NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)), as well as (b) a completed EM&V data field summary. The AIV must upload an EM&V plan as part of the Asset Application and must verify reported Static Data. Asset Output registered in accordance with this protocol may be used as the basis for the creation of Instruments. See Figure 12.

Each protocol has a unique Static Data QA/QC code that reflects the specific modules included in that protocol. This Static Data QA/QC code appears as a data field for every related Instrument created. For example, as illustrated in Figure 11 below, the Static Data QA/QC code for NEER-Basic would be: ABC1256.

Figure 11

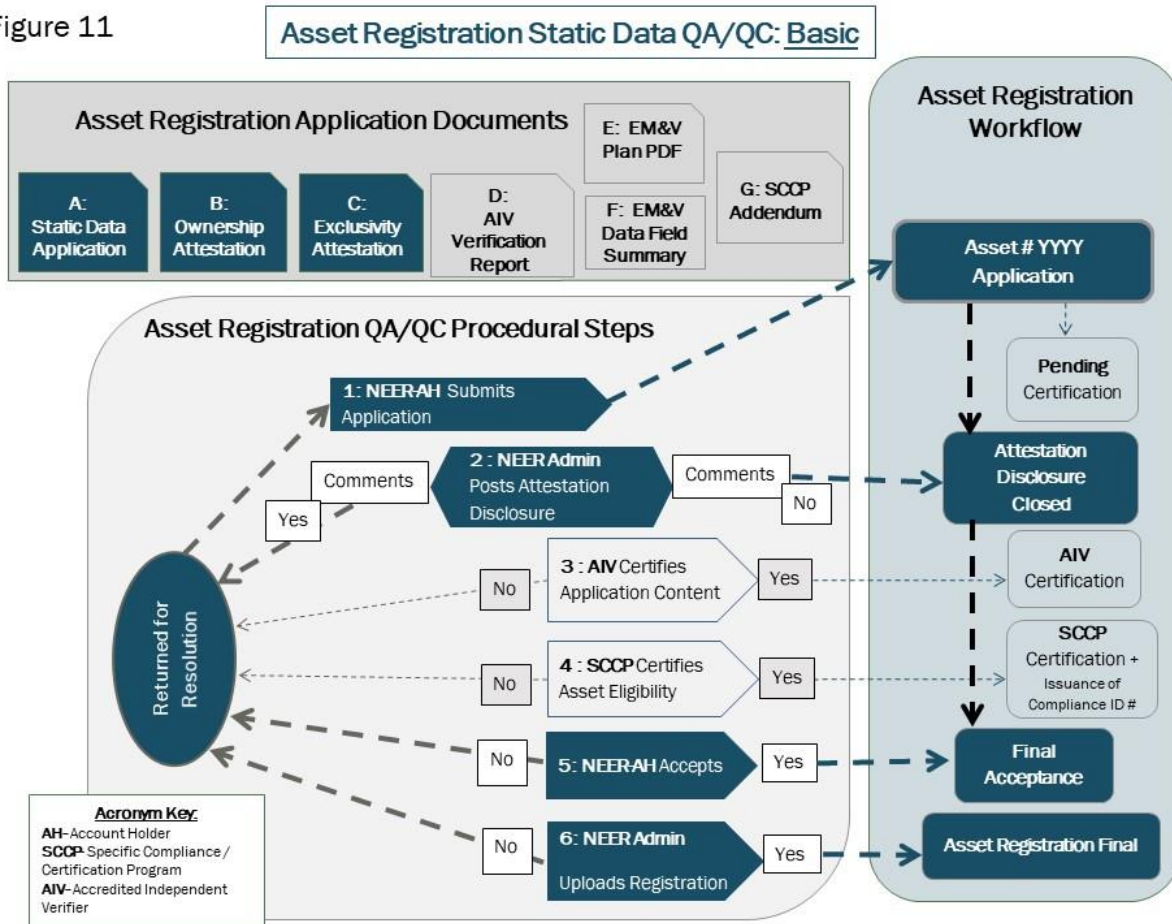


Figure 11 above illustrates the modules highlighted in green that are required for an EE Provider selecting NEER Basic.

Figure 12

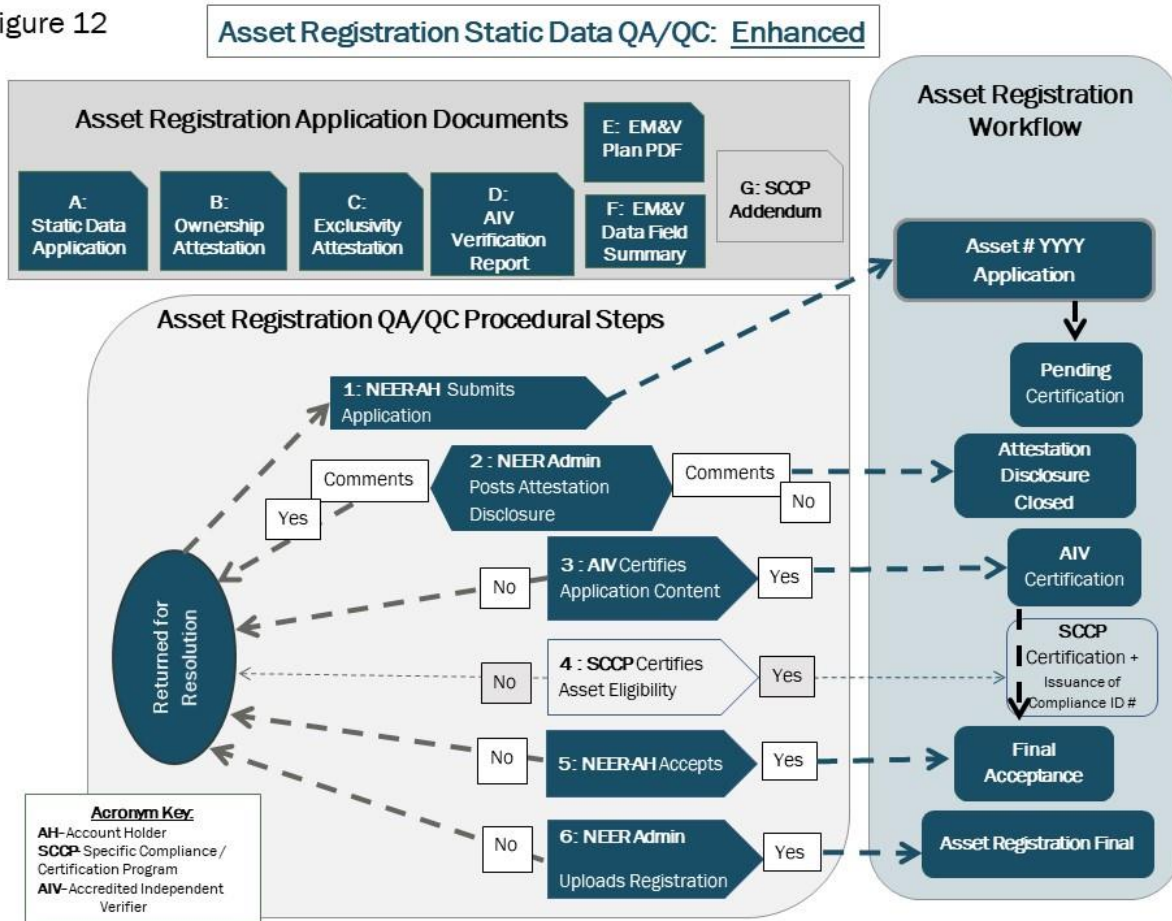


Figure 12 above illustrates the modules highlighted in green that are required for an EE Provider selecting NEER Enhanced.

The EE Provider is responsible for reporting the Static Data QA/QC code corresponding to the selected QA/QC protocol during the Asset registration process. Subsequent changes in the Static Data QA/QC module selection can be made throughout the Static Data reporting process (see [Section 6.1.1.1](#)).

## 6.2 Asset Termination

An EE Provider may remove an Asset from the NEER by notifying the NEER-Admin and specifying the following: (a) the date the Asset should be removed from the NEER, (b) the name of the Asset's reporting QRE, if applicable, and (c) the Sub-Account(s) in which the Asset's Instruments have been deposited (if the Sub-Account(s) are being closed as well). The NEER-Admin creates Instruments for an Asset up to the date of Asset Termination as instructed by the NEER-AH. If the Account linked to the Asset is closed at the same time, the NEER-AH must also specify the Account that receives deposits of any Instruments scheduled to be created in the future. Failure to do so results in the NEER-AH losing the Instruments. If the NEER-Admin has cause to suspend the Asset's registration in the NEER, no Instruments will be created while the Asset is under suspension. Examples of issues that may warrant suspension include double registration, questions about the validity of Asset registration documentation or unpaid fees.

For more detail, see Reasons for Asset Termination ([Appendix 6.2](#)).

### 6.3 Transferring an Asset to a Different Account

To transfer an Asset to a different Account, the NEER-AH must complete an online Change of Ownership Application ([Appendix 6.3](#)). Transfers must include an attestation, signed by the EE Provider and both the former and new NEER-AH, declaring that the Asset is now held by the new NEER-AH. The attestation must be approved by any associated Client Jurisdictions (if the Client Jurisdiction(s) require such approval) and then must be approved by the NEER-Admin.

### 6.4 Aggregation of EE Projects

The NEER can support the aggregation of multiple EE Projects into a single NEER Asset by an EE Provider, provided that (a) the EE Provider submits the required information on each EE Project proposed as part of the aggregation, and (b) all registration requirements are met.

Aggregation in the NEER is not evidence that the rules of any Client Jurisdiction(s) are satisfied.

See Guidance for Aggregation of EE Projects ([Appendix 6.4](#)) for more information.

### 6.5 Registering an Asset

#### 6.5.1 Registration Requirements for Assets

##### 6.5.1.1 Registration Application for Assets

To register Assets, an EE Provider must submit a completed online Asset Application ([Appendix 6.5.1](#)) to the NEER-Admin through the NEER website. If required by the selected protocol (see NEER Enhanced or SCCP Addendums Requirements), an AIV may have to execute components of the online Application including completion of certifications or attestations. The NEER-Admin reviews the Asset Application and may request more information before it issues a decision, at its sole discretion. Asset Application registrants may seek Dispute Resolution if the Application is unsuccessful. An Asset remains active until terminated. See [Section 11](#) for more details on NEER Dispute Resolution.

##### 6.5.1.2 NEER Exclusivity for Registration of Assets

To ensure that double counting does not occur, Assets registered in the NEER must have 100% of their Asset Output registered in the NEER. EE Providers registering an Asset must submit proof of NEER exclusivity by completing a NEER Attestation of Exclusivity ([Appendix 6.5.1.2 \[a\]](#)), as part of the online Asset Application ([Appendix 6.5.1](#)). The NEER-Admin discloses each NEER Attestation of Exclusivity on the NEER website. Only the NEER Attestation of Exclusivity is made publicly available. If any concerns or disagreements related to the NEER Attestation of Exclusivity arise, they must be resolved through Dispute Resolution before the NEER-Admin can finalize Asset registration. For more details, see the Attestation Disclosure Process ([Appendix 6.5.1.2 \[b\]](#)) and [Section 11](#) on NEER Dispute Resolution.

##### 6.5.1.3 Ownership Demonstration for Assets

To register an Asset, a NEER-AH must demonstrate that they are the EE Provider for the specified EE Project(s). They must show that they have full ownership of all Attributes associated with the EE Project(s), and the ability to adequately measure and report Asset Output from the EE Project(s). The NEER-AH must demonstrate ownership of the EE Project by completing a NEER Attestation of Ownership ([Appendix 6.5.1.3](#)) as part of the online Asset Application ([Appendix 6.5.1](#)). The NEER-Admin publicly discloses each NEER Attestation of Ownership on the NEER website. If any concerns or disagreements related to the NEER Attestation of Ownership arise, they must be resolved through Dispute Resolution before the NEER-Admin can finalize Asset registration. For more details, see the Attestation Disclosure Process ([Appendix 6.5.1.2 \[b\]](#)) and [Section 11](#) on NEER Dispute Resolution.



#### 6.5.1.4 EM&V Plan Reporting Requirements for Assets

If an EE Provider is participating in a SCCP, the associated Client Jurisdiction's EM&V requirements will be applied to the EE Project(s). The NEER supports a range of EM&V plan reporting requirements to address Client Jurisdictions' requests.

EE Providers not participating in any SCCPs must select either the NEER Basic or NEER Enhanced Protocol. EM&V requirements for these protocols are described in [Section 6.1.1.2](#).

#### 6.5.1.5 Specific Compliance/Certification Program Addendum to Registration Requirements for Assets

The NEER-Admin will work with Client Jurisdictions to prepare SCCP Asset Application Addendums and support online submission of any supplemental data required for the issuance of a qualified SCCP Identification Number (SCCP ID Number). SCCP ID Numbers will be issued by each SCCP Administrator.

An EE Provider seeking to use the NEER to demonstrate compliance with a SCCP(s) must, in addition to submitting a completed online Asset Application ([Appendix 6.5.1](#)), submit the appropriate Client Jurisdiction's SCCP Asset Application Addendum ([Appendix 6.5.1.5](#)).

The NEER-Admin requests that Client Jurisdictions verify all issued SCCP ID Numbers to ensure consistency and eligibility with the SCCP, unless otherwise decided upon.

### 7 Asset Output Dynamic Data Reporting, Verification and Certification

#### 7.1 Dynamic Data Reporting

Each Asset registered in the NEER is linked to an associated Asset Output Log. The Asset Output Log is an electronic ledger where Asset Output Dynamic Data is recorded and stored prior to Instrument creation. Each electronic submission must include data for all NEER Asset Output Log Data Fields ([Appendix 7.1](#)) required for the particular type of Asset Output by Vintage in a format compatible with the NEER. An M&V report may cover a reporting period that ranges from one calendar quarter to 24 months in length. The NEER-Admin must review the number of Instruments to be issued for each Asset within 50 days of receipt of the complete M&V report. The NEER-Admin uploads the Dynamic Data, including quantity of Asset Output per Vintage period, to the Asset Output Log. The NEER-Admin constructs the permissions and notifications for the Asset Output Log data acceptance process to assure strict compliance with the selected QA/QC protocol.

#### 7.2 Dynamic Data QA/QC

Dynamic Data QA/QC has three components; the Asset Output Dynamic Data Application ([Appendix 7.2 \[a\]](#)) required documents, the Asset Output QA/QC procedural steps and the Asset Output Log workflow process. Within each of these components, a common set of possible Dynamic Data QA/QC modules are provided in order to minimize duplication of efforts and promote standardization and transparency.

Figure 13

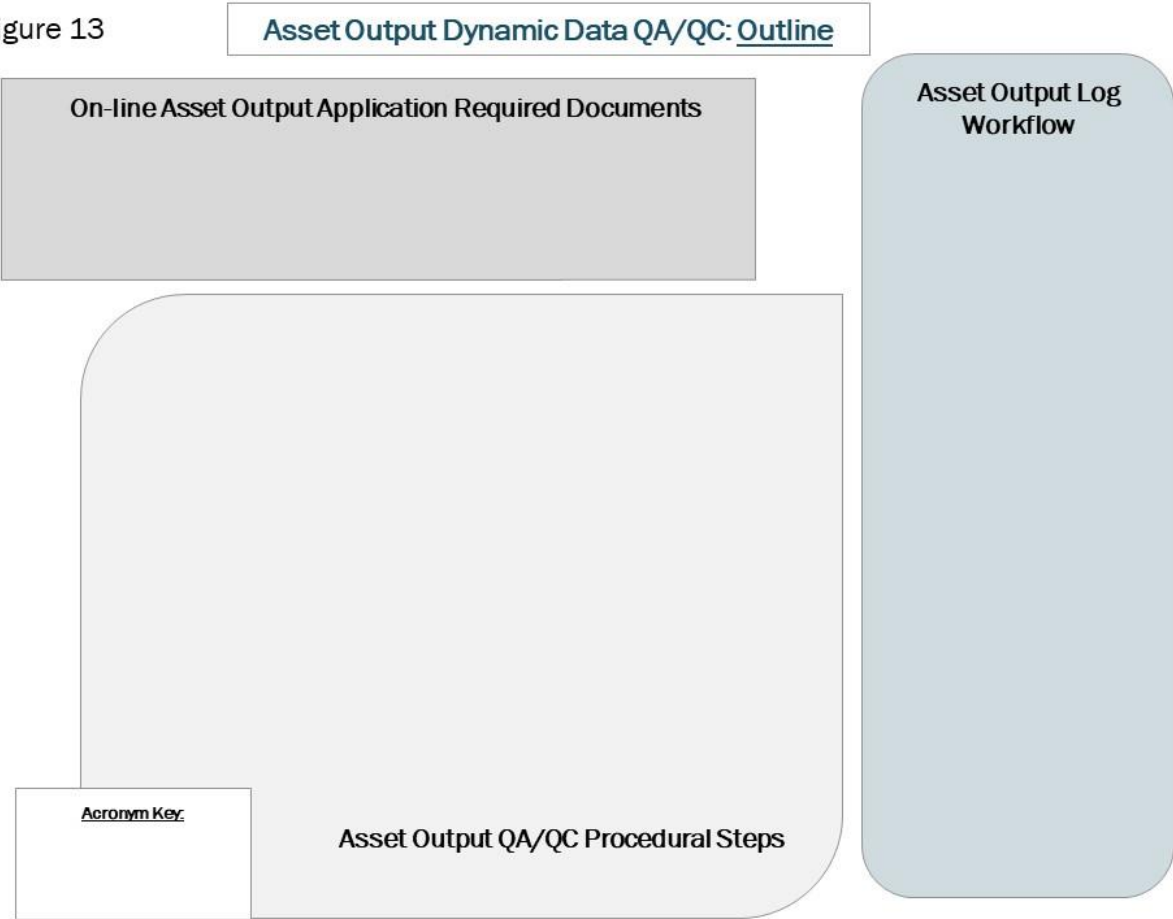
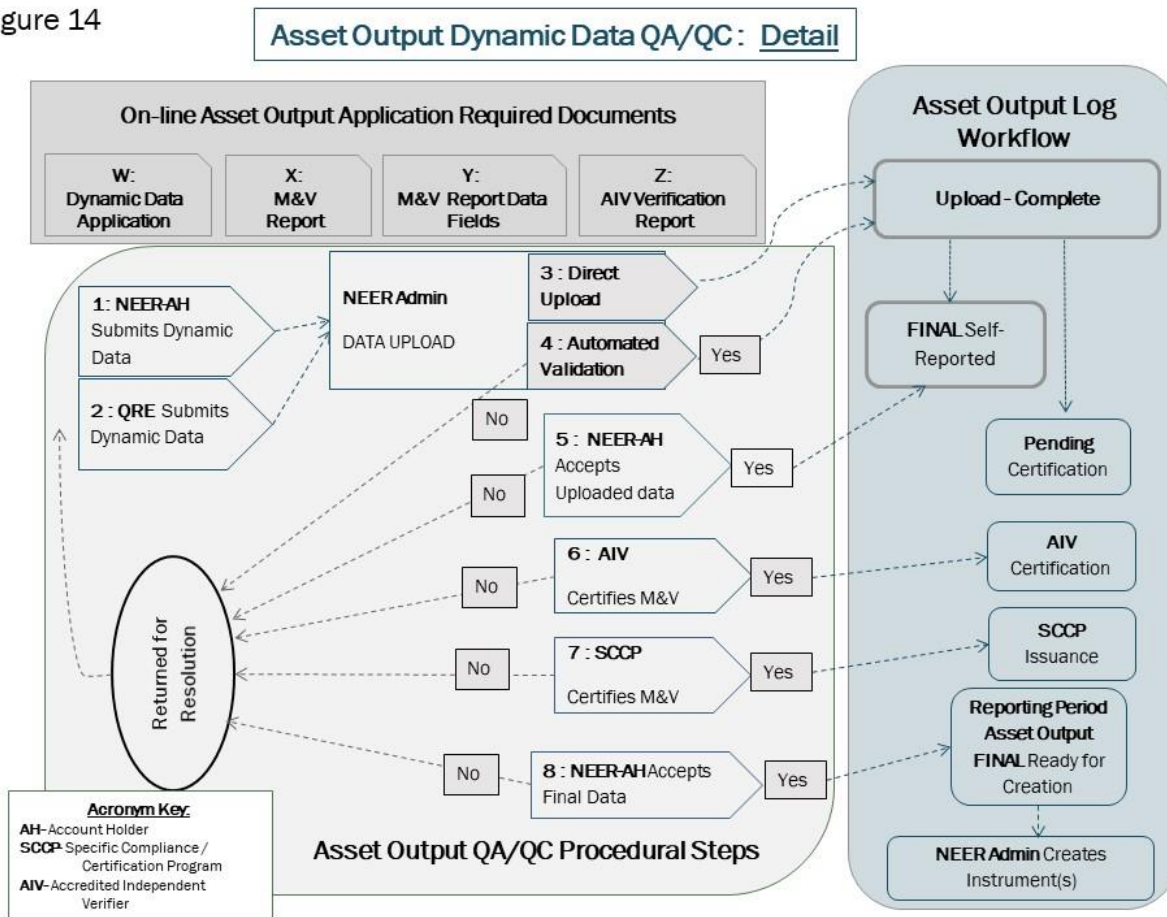


Figure 13 above illustrates the three Dynamic Data QA/QC protocol components. Figure 14 below illustrates modules within each component.



Figure 14



The NEER Dynamic Data QA/QC Module Guidelines ([Appendix 7.2 \[b\]](#)) provide detailed descriptions of modules, the documents, tasks, roles and responsibilities, permissions, timelines and notifications involved in each procedural step. These guidelines also describe how a NEER-AH may propose the creation of new Dynamic Data QA/QC modules.

SCCP Administrators define which modules will be included in their SCCPs' QA/QC protocols. Custom requirements are defined in that SCCPs' Asset Application Addendum ([Appendix 6.5.1.5](#)) to the Asset Application ([Appendix 6.5.1](#)). For its SCCP requirement, a Client Jurisdiction may set its own standards or choose a NEER protocol as its standard for qualification.

In its initial phase, the NEER-GB will oversee two QA/QC Protocols, NEER Basic and NEER Enhanced, which will have the following Dynamic Data QA/QC requirements:

**NEER Basic:** This option does not include filing an M&V report or any third-party verification of Dynamic Data. The EE Provider fully discloses that Asset Output is self-reported, is not verified and will not be used as the basis for the creation of any Instruments. See Figure 15.

**NEER Enhanced:** This option requires filing an M&V report, including M&V report data fields and third-party certification that Dynamic Data calculations are consistent with the EM&V plan submitted during Asset registration. Asset Output registered in accordance with this protocol may be used as the basis for the creation of Instruments. See Figure 16.

Figure 15

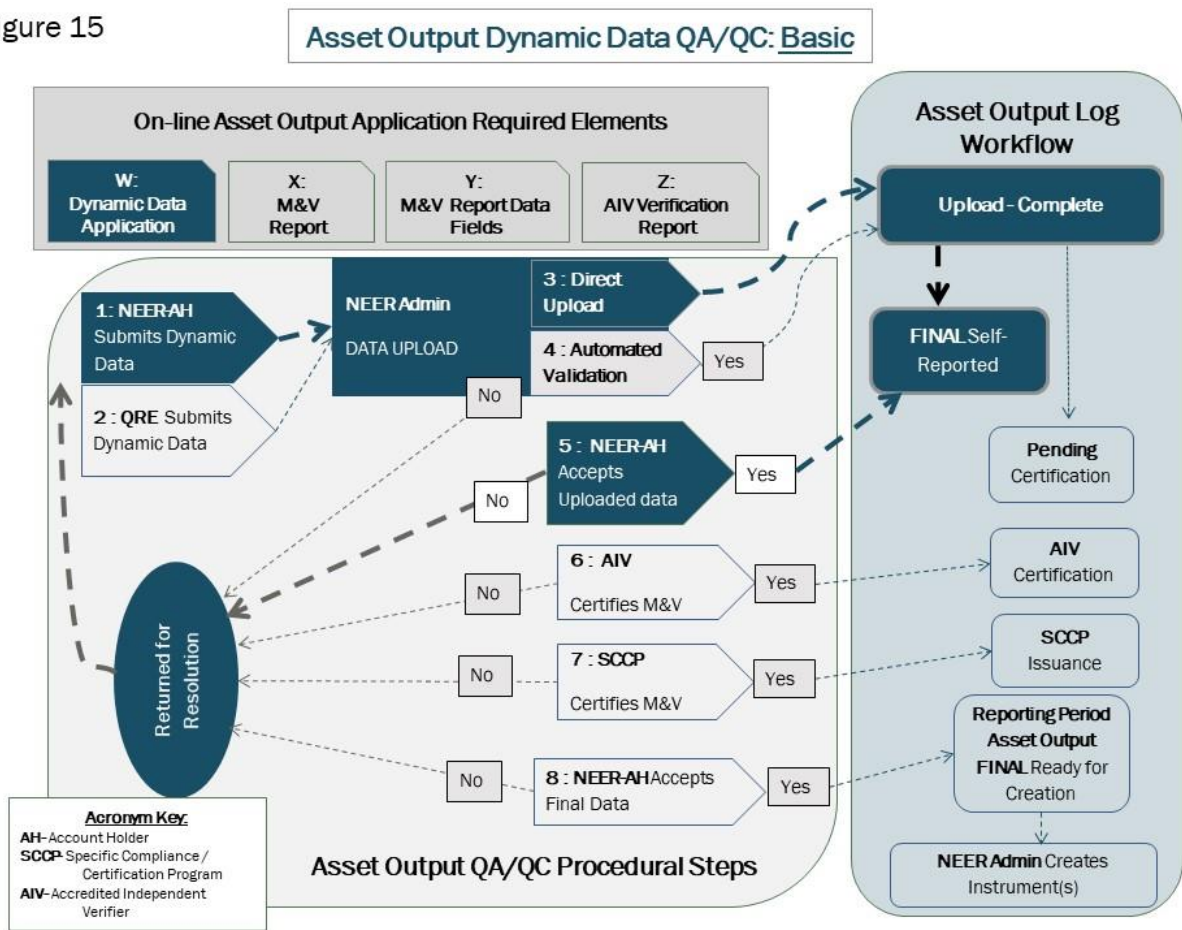


Figure 15 above illustrates the dynamic data modules highlighted in green that are required for an EE Provider selecting NEER Basic.

Figure 16

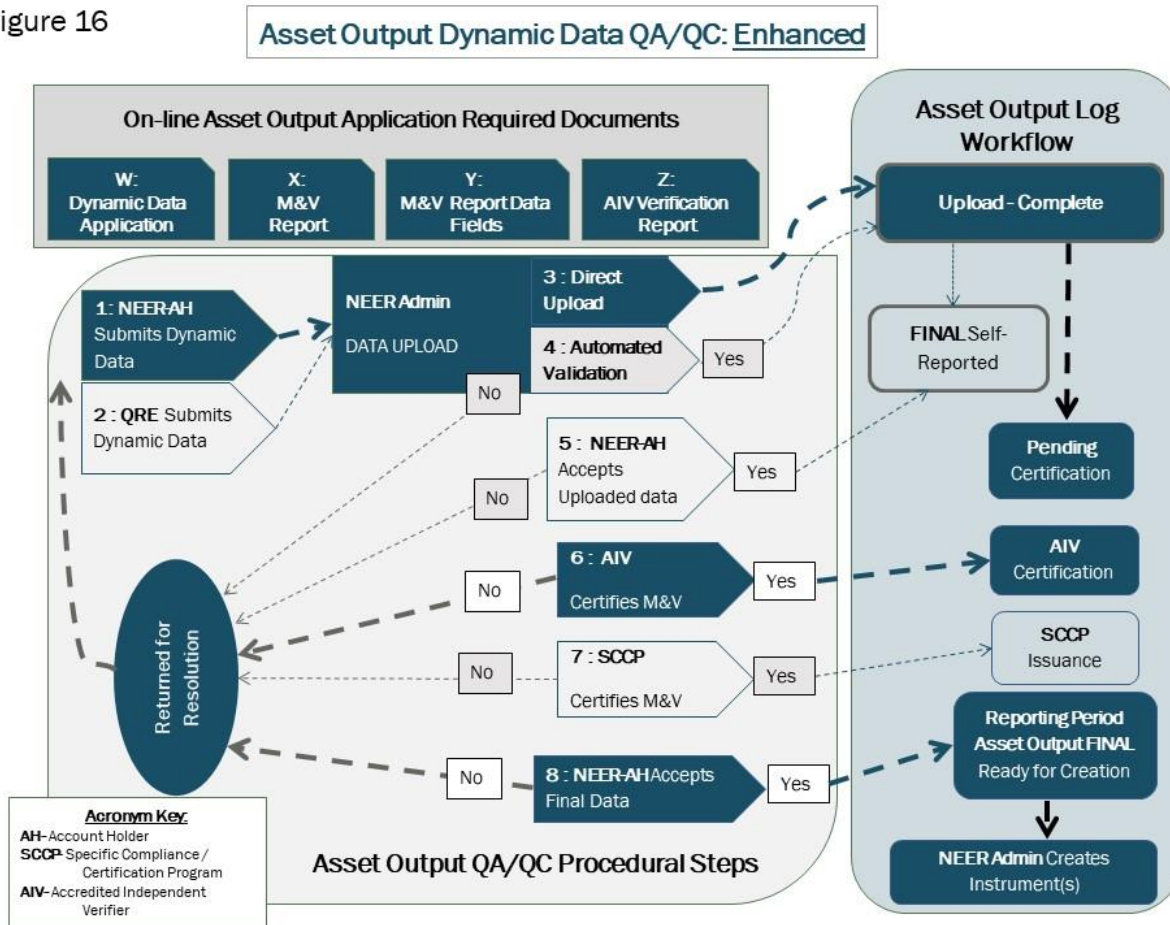


Figure 16 above illustrates the dynamic data modules highlighted in green that are required for an EE Provider selecting NEER Enhanced.

Each protocol has a unique Dynamic Data QA/QC code that reflects the specific modules included in that protocol. This Dynamic Data QA/QC code appears on every related Instrument created. For example, as illustrated in Figure 15 above, the Dynamic Data QA/QC code for NEER-Basic would be W135.

The EE Provider is responsible for reporting the Dynamic Data QA/QC code corresponding to the selected QA/QC protocol during the Asset registration process. An EE Provider can change the selected QA/QC protocol prior to the first dynamic data submission by completing the online Static Data Modification Request ([Appendix 6.5.1](#)). Once an Asset Output Log contains Dynamic Data, the protocol can only be changed by the NEER-Admin, and only after the EE Provider has completed any tasks necessary to have all existing logged Dynamic Data reported under the new protocol.

Records of all actions taken during the review process - including a history of all disputes, resolutions and adjustments; and the NEER-AH and individual login (e.g., names and credentials of individuals) executing each task - will be archived on the NEER software.

### 7.2.1 Asset Output Historical Dynamic Data

The NEER supports Asset Output data for Vintages prior to the timeframe in which the Asset was first registered. For Assets participating in an SCCP, the NEER-AH should refer to the SCCP's requirements. For EE Providers registering an Asset not participating in an SCCP, Asset Output data for Vintages up to

two (2) calendar years prior to the calendar year in which the Asset is first registered can be submitted to the NEER. Reporting Asset Output data for Vintages after the date when the Asset was registered in the NEER has to be completed within the second (2) calendar year following the Vintage year.

## 8 Instrument Transactions

### 8.1 Creation of Instruments

Instruments track various Attributes associated with each Unit of Asset Output and are created in whole numbers. Each Instrument shall have a unique Serial Number, which uses unique identification codes to describe the Attribute(s) associated with each Unit of Asset Output. For more information, see NEER Serial Number Formats ([Appendix 8.1](#)).

#### 8.1.1 Instrument Type

There are two types of Instruments (see Figure 17 below) that can be created in the NEER:

- **Certificate:** A general-purpose, uniquely numbered Instrument documenting all Attributes and the Vintage of one Unit of Asset Output. Certificates created and tracked within the NEER identify all Single Attribute Instruments associated with the same Unit of Asset Output. For full disclosure and to facilitate retrieval of document and QA/QC records, Serial Numbers for all Instruments (Certificate and any Single Attribute Instruments) associated with a single Unit of Asset Output appear on each Instrument.
- **Single Attribute Instrument** (e.g., ERC or NO<sub>x</sub> Allowance): A single purpose, uniquely numbered Instrument representing a single SCCP Attribute of one Unit of Asset Output, for the purpose of showing compliance or participation with a SCCP. To create a Single Attribute Instrument, the Asset must have a SCCP ID Number issued by the SCCP Administrator and have met all SCCP data QA/QC requirements. Single Attribute Instruments may be used for voluntary purposes, or for the purpose of showing compliance with a SCCP.

See Figure 18 below for more information on the Certificate/Single Attribute Instrument relationship.

Figure 17

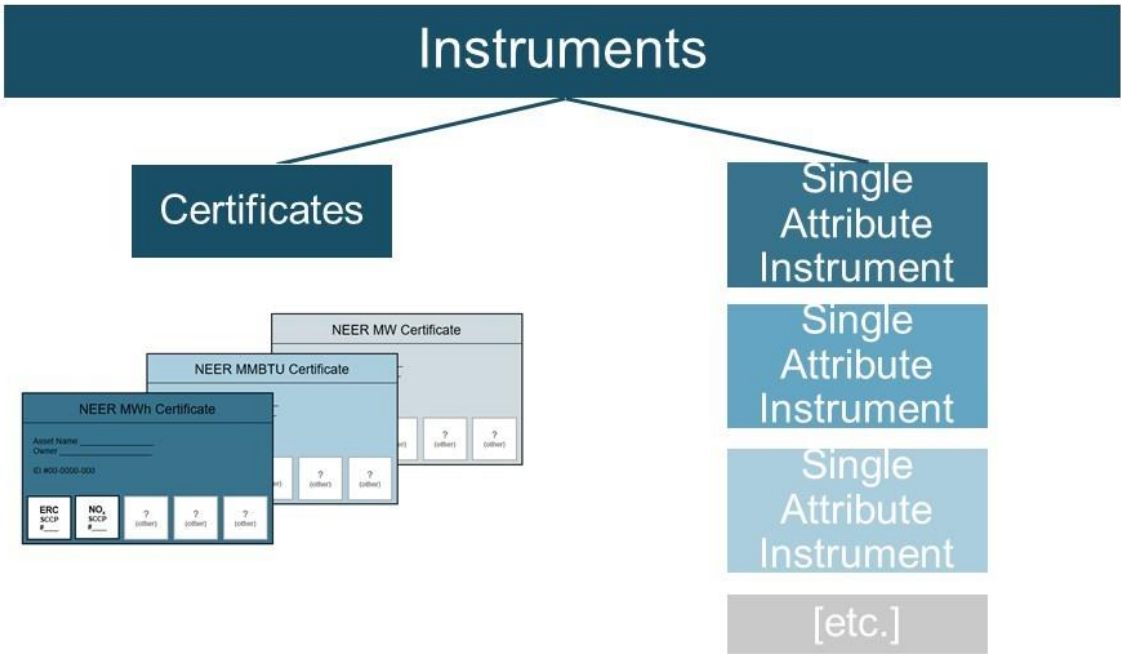
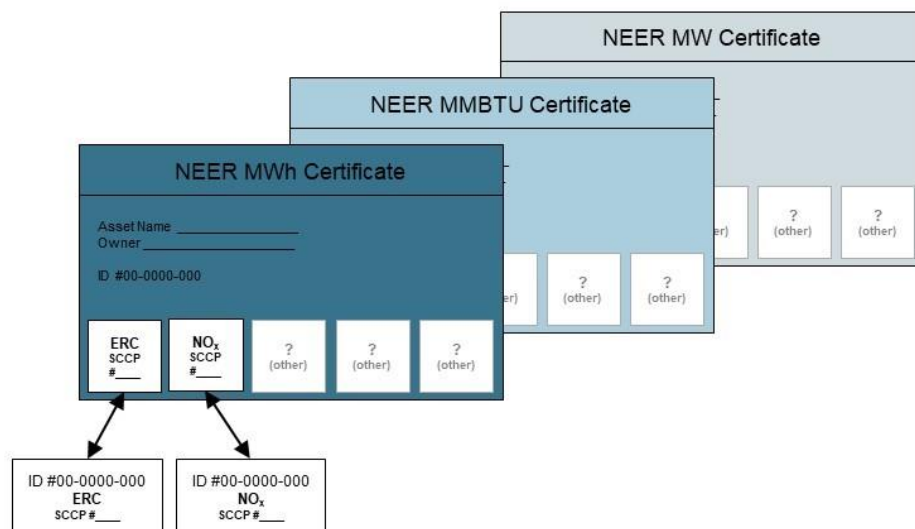


Figure 18

## Certificate / Single Attribute Instrument Relationship



### 8.1.2 Instrument Creation

The NEER-Admin creates Instruments for each Unit of Asset Output, when appropriate. Instruments are created based on the number of whole units listed in the Asset Output Log for a given Vintage. See [Section 7](#) detailing measurement of Units of Asset Output by Asset Output type.

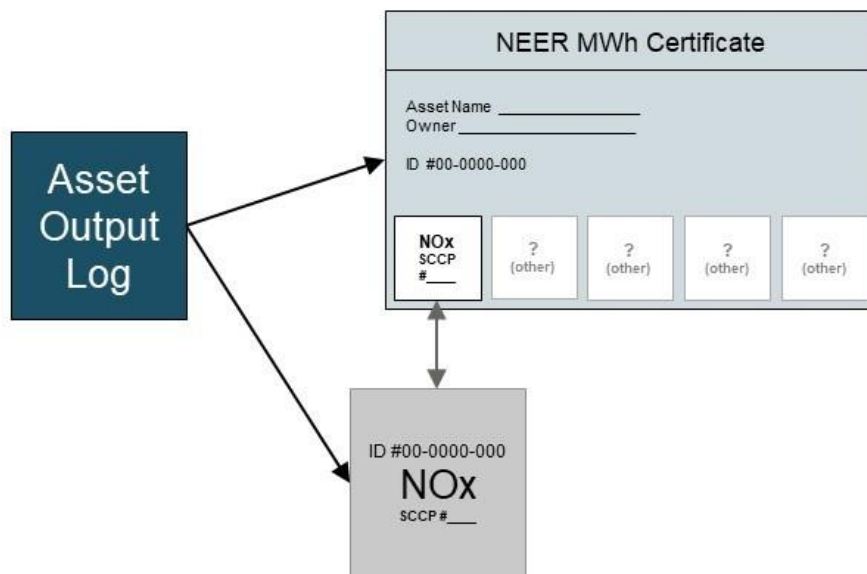
The Vintage on the created Instrument will be the last Vintage period of Asset Output contributing to an accumulated whole Unit of Asset Output (e.g., MWh, MW, MBTU, or Gal.). See Figure 19 below for more information.

Instruments imported from a Compatible Tracking System must meet standards as determined by the NEER-GB. The NEER will issue a unique Serial Number for Single Attribute Instruments imported from Compatible Tracking Systems, as described in [Section 8.6](#) on Interoperability. Instruments created based on an import from a compatible system will show Serial Numbers from all predecessor registries' Instruments for all import and export transactions.



Figure 19

# Instrument Creation



## 8.1.3 Vintage Creation Dates

The Vintage Creation Date for Instruments is the last calendar day of the Vintage period. If a Dynamic Data QA/QC process is completed after the Vintage Creation Date, related Instruments are created on the calendar day after the EE Provider approves data for Instrument creation.

## 8.1.4 Instrument Data Fields

Instrument Data Fields include those listed by Instrument Type ([Appendix 8.1.4](#)) and any fields added in the future (see [Appendix 4.1](#) for information on amending the NEER Principles and Operating Rules).

## 8.1.5 Initial Deposit of Instruments in NEER Accounts

Instruments will be deposited into the EE Provider's Active Sub-Account that is associated with the Asset, as established during the Asset registration process described in [Section 6.1](#).

## 8.2 Instrument Transfers

### 8.2.1 Standard Transfers

General and Asset-only Account Holders may transfer active Instruments to other NEER-AHs at any time. When a NEER-AH wishes to transfer an Instrument or batch of Instruments, it must select the Instruments



from its Active Sub-Accounts and indicate that the Instruments are to be transferred to another Active Sub-Account belonging to them, or to the Active Sub-Account of another NEER-AH.<sup>5</sup>

While a transfer is in progress, the Instruments are frozen to prevent inadvertent scheduling of duplicate transfers. To be completed, each transfer must be confirmed by the recipient NEER-AH. If confirmed, the transfer recipient must designate the Sub-Account to which the Instruments are to be delivered. As soon as the recipient has confirmed or rejected the transfer, the NEER-Admin will notify the transferor to indicate the action taken. The transferor may cancel a transfer before it has been confirmed by the recipient by withdrawing the transfer. If the transfer is withdrawn, the NEER-Admin will notify the recipient.

### 8.3 Instrument Retirement

Instruments may be retired by the NEER-AH and, in some instances, by the NEER-Admin. The Retirement Sub-Account is the permanent repository for Retired Instruments. The NEER-AH becomes the final owner of record of the Attributes represented by any Retired Instruments. NEER-AHs may retire Instruments to allow the Instrument to be used as documentation in a compliance filing or marketing claim.

#### 8.3.1 Mechanism for Retiring Instruments

When a NEER-AH wishes to retire an Instrument or batch of Instruments, it must select the Instruments from its Active Sub-Accounts and indicate that they are to be retired. The NEER-AH is required to select a retirement reason from the Retirement Designation List ([Appendix 5.1.2.2](#)) and must select the Retirement Sub-Account to which the Instruments will be deposited. The system transfers the Instruments from the NEER-AH's Active Sub-Account to the indicated Retirement Sub-Account. Once the Instruments are deposited in the Retirement Sub-Account, they can only be withdrawn by the NEER-Admin under limited circumstances (See [Section 8.3.2](#)).

#### 8.3.2 Withdrawal from a Retirement Sub-Account

A NEER-AH may request that the NEER-Admin withdraw Instrument(s) from a Retirement Sub-Account only if all of the following apply:

1. The Instrument(s) was retired within 12 months of the date of the withdrawal request.
2. The NEER-AH can demonstrate that the Retired Instrument(s) has not yet been applied toward a Client Jurisdiction's regulatory program or EE obligation, and has not been applied toward an obligation under a voluntary program.
3. The NEER-AH can demonstrate that a legitimate error was made, or a regulatory, legislative, or programmatic change occurred that is prompting the withdrawal.

If the Retired Instrument(s) in question has as its "Reason for Retirement" designation to either a compliance or voluntary program, the NEER-Admin will notify the SCCP Administrator in writing and, if possible, via telephone, of the proposed withdrawal from the NEER-AH's Retirement Sub-Account. The SCCP Administrator will be given thirty (30) calendar days to respond. If no response is received, or if the SCCP Administrator confirms that the Instrument(s) has not been used for compliance purposes, the Instrument(s) will be withdrawn from the Retirement Sub-Account and placed into the Active Sub-Account designated by the NEER-AH.

If the SCCP Administrator indicates the Instrument(s) has already been applied to a program for compliance purposes, the NEER-Admin must refuse to withdraw the Instrument(s) from the NEER-AH's Retirement Sub-Account.

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<sup>5</sup> Only General Accounts are eligible to receive Instrument transfers.

## 8.4 Instrument Expiration

NEER Certificates will not expire. Client Jurisdictions may request that the NEER-Admin add Vintage restrictions on SCCP Retirement Accounts to support regulatory requirements.

## 8.5 Instrument Errors and Correction

Once an Instrument is created, no changes can be made to that Instrument. In the event that an error is discovered after the Instrument has been created, the NEER-Admin will take measures to rectify the problem. The measures will be based on the nature and the egregiousness of the error. If the error is related to the number of Instruments created, the NEER-Admin will first attempt to rectify this by making an adjustment to the Asset Output Log associated with the Asset. If the error is found in one of the data fields associated with the Instrument, the NEER-Admin will handle the situation on a case-by-case basis. Examples of actions that could be taken include, but are not limited to, notifying purchasers of the erroneous Instruments, freezing the Account of the offending party or banning participation in the NEER.

## 8.6 Interoperability

Limitations may be placed on export or import as determined by the NEER-GB and Client Jurisdiction needs. For more information on interoperability, see Compatible Registries ([Appendix 8.6](#)).

### 8.6.1 Instrument Export

Instruments may be exported by the NEER-AH from an Active Sub-Account to another Account Holder in a Compatible Tracking System. A NEER-AH may not export Instruments out of its Retirement Sub-Account(s).

In order to export an Instrument to another tracking system, the NEER-AH must designate a specific batch of Instruments for export and designate the compatible registry and Account Holder to whom the Instruments should be delivered. The NEER-Admin must confirm that the Instruments are eligible for export to the importing tracking system. For more information, see Specific Tracking System Requirements ([Appendix 8.6.1](#)).

### 8.6.2 Instrument Import

In order to import an Instrument from another tracking system, the Account Holder in the exporting tracking system will need to follow that tracking system's procedures for an export. This may include designating a specific batch of Instruments for export and designating the importing registry (i.e., NEER), then importing to the NEER-AH.

Imported Instruments are assigned unique NEER Serial Numbers and shall also carry all unique Serial Numbers from all predecessor registries.

## 9 Reports

The NEER creates reports for NEER-AHs, Client Jurisdictions and the public.

### 9.1 Standard Reports

#### 9.1.1 Account Holder Reports

NEER-AH reports for a specific Account will only be accessible to the NEER-AH's AAR, Alternate-AAR and the NEER-Admin. NEER-AHs can view real time data in these reports.

NEER-AH reports include:

- **My NEER-AH Registration History:** This report provides a list of all the changes to the NEER-AH registration data.

Reports for Holders of General and Asset-only Accounts include:

- **My Instrument Transfers:** A comprehensive list of Instrument transfers between Sub-Accounts and other NEER-AHs.
- **My Sub-Accounts:** A list of Instruments held in the Account's Sub-Accounts; allows the NEER-AH to filter data by specific Active or Retirement Sub-Accounts.
- **Retirement Compliance Report:** NEER-AHs may view all Instruments retired to each compliance or certification program and an effective date of retirement. This report can be provided to third parties wanting to verify retirement of Instruments.

Reports for EE Providers only:

- **My Asset Registration History:** A list of all the Assets that have been registered in the NEER by the EE Provider including date of registration, NEER Asset ID Number, and a link to the Asset registration document.
- **My Asset Output Log:** A summary of all Asset Output data loaded into the NEER for all of the EE Provider's Assets.
- **My Asset Output Report:** A report displaying the verified avoided energy, water, capacity, and/or emissions of an Asset, sorted by Vintage.
- **My Instrument Report:** A summary of all Instruments created in the NEER for a specific EE Provider, filtered by Vintage year.
- **NEER Assets by Status:** A comprehensive list of an EE Provider's Assets, filtered by status and data field summary.

Business Confidential Reports for Client Jurisdictions only:

- **Compliance Report:** Gauges NEER-AH compliance with a SCCP they are affiliated with, based on Single Attribute Instruments deposited in the NEER-AHs' Retirement Sub-Accounts. Client Jurisdictions may request compliance reports to be publicly available.
- **Instrument Look-up Report:** A comprehensive list of all Instruments created by the NEER to which the Client Jurisdiction has access, sorted by NEER Asset ID Number, SCCP Compliance ID Number(s) and NEER-AH.
- **Asset Eligibility Report:** A comprehensive list of all Assets registered within the NEER, sorted by NEER Asset ID Number; indicates whether the Asset is eligible for a SCCP.
- **Asset Output Report:** A comprehensive list of all available Asset Outputs for Client Jurisdictions looking to view Asset Output data.
- **Program Energy Savings Report:** A comprehensive list of program energy savings achieved by key attributes (e.g. energy type, location, vintage).

**Please note:** Client Jurisdictions/SCCP Administrators will be provided with reports on retirements, however not transactions in between creation and retirement – unless otherwise required by the Client Jurisdiction/SCCP Administrator.

### 9.1.2 Public Reports

The following public reports are provided by the NEER: *See Example Public Reports on [NAR's website](#).*

- **NEER-AH Report:** A list of all NEER-AHs, with limited contact information.
- **Instruments:** NEER-AHs or Client Jurisdictions may choose to make Instrument details available to the Public. Any Instruments that have been designated for such disclosure appear on this report.

- **Imported Projects:** List of projects from which Instruments have been imported into the NEER from other Compatible Tracking Systems.
- **Created Instruments:** Lists the aggregate number of Instruments created in the NEER by Vintage.
- **NEER Projects Report:** Lists all Assets in the NEER, with eligibility information.
- **Instrument Retirement Report:** Lists Instrument retirements.

Public reports are accessible to anyone via the NEER website. It is expected that additional public reports will be developed to meet future needs of NEER-AHs, including EE Providers, SCCP Administrators and Client Jurisdictions, using the NEER. Public reports are carefully designed to ensure the confidentiality of NEER-AH data per agreements in the Terms of Use ([Appendix 4.1](#)).

## 9.2 Requesting a Custom Report

NEER-AHs - including EE Providers, SCCP Administrators, Client Jurisdictions and third parties - may request a custom report. The report's release is subject to approval by involved parties and must comply with the Terms of Use confidentiality requirements ([Appendix 4.1](#)).

### 9.2.1 Protocols for Account Holders to Direct the NEER to Provide Data Reports Directly to a Client Jurisdiction

The NEER will allow holders of General and Asset-only Accounts to submit certain data directly to the Client Jurisdiction. Once that data has been submitted, both the NEER-Admin and the NEER-AH will be notified of successful data transmittal. These data reports will be sent, as needed by the Client Jurisdiction, at the discretion of the holder of the General or Asset-only Account.

## 10 Data Security

The NEER will follow a robust set of security practice requirements to ensure data integrity and confidentiality, as follows:

- Secured web portal interface with password protection for collection of Static Data, NEER-AH access and Asset Output reporting;
- Restricted access privileges based on NEER-AH roles;
- Well-defined system backup and recovery processes; and,
- Secured file transfer and data upload processes using encrypted communications for all data interfaces.

See [Appendix 10](#) for more details regarding Data Security Measures.

## 11 Dispute Resolution

These guidelines outline the Dispute Resolution process that will be followed by the NEER-Admin when addressing disputes between entities involved in the NEER including any between NEER-AH(s) and the NEER-Admin. Please note: Please note that disputes solely between NEER-AHs, between an EE Providers and Client Jurisdictions or between a NEER-AH and an entity outside the NEER should be resolved independently.

Disputes handled within NEER may involve attestations, approval or rejection of data by the NEER-Admin, suspicions of double counting or false information, and any other matter impacting the accuracy, transparency, or in conflict with information submitted and/or contained in the NEER. Disputing parties should first attempt to settle any disputes in good faith through informal written and/or oral discussion(s). In these cases, the disputing parties shall memorialize their agreement in writing through a joint statement of resolution signed by all parties and provided to the NEER-Admin for archival.

If an agreement cannot be reached in a timely manner, the NEER-AH may formally file a Dispute Report within the NEER. To report a dispute, the NEER-AH must report a dispute through the NEER website. This should include a description of the issue(s), the legal authority or other basis for the NEER-AH's position, and the remedy sought. The NEER-AH should include any supporting evidence.

Once complete, the dispute will be sent to the NEER-Admin and the NEER-GB for review. In the case of an attestation-related dispute, it will also be sent to the other relevant NEER-AH(s). The NEER-GB will have 45 calendar days to contact the NEER-AH with a written settlement proposal. The NEER-AH may then either accept the settlement proposal or if the NEER-AH rejects a settlement proposal it may request a hearing administered by the American Arbitration Association (AAA). Neither party(ies) shall be formally bound by the recommended resolution nor by any written submissions they make to the NEER-GB. However, such submissions may be entered into evidence at a later Dispute Resolution process, if any, including arbitration.

For guidelines regarding AAA mediation procedure, please refer to the Terms of Use ([Appendix 4.1](#)), Section 25.

## Appendices

These appendices are provided to support the NEER Principles and Operating Rules. They will continue to be refined as the platform evolves.

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Please note, these appendices contain terms not otherwise defined in [Section 4](#) of the NEER Principles and Operating Rules. Definitions of these terms are included below:

#### Appendix Definition List

1. **Accreditation Identification Number (Accreditation ID number):** The number issued by the Accreditation Body to an Accredited Independent Verifier.
2. **Applicable Law:** Any law in a Jurisdiction (e.g., federal or state) that applies to the Principles and Operating Rules, Terms of Use and Privacy Policy.
3. **Asset Owner:** The individual who is authorized by an eligible entity to claim ownership and exclusivity of the Asset being registered in the NEER.
4. **Asset Type:** A classification of the Energy Efficiency Project provided by the Energy Efficiency Provider. The NEER software provides a list of standard Asset Types to choose from as well as an option for the EE Provider to add custom Asset Types.
5. **Batch Number:** The number assigned to each Asset- and vintage-specific batch of Instruments created.
6. **Common Practice Baseline (CPB):** The level of energy use that would occur, in the absence of the Energy Efficiency Project, at the more energy efficient of either (1) the highest level of energy efficiency required by the applicable federal, state, or local building energy code or product or equipment standard, if any (i.e., the code or standard that corresponds to the lowest energy consumption of the buildings or equipment it applies to, all else being equal); or (2) the expected technology, operating conditions, or practices that would have existed at the time of implementation or the likely subsequent replacement within the Effective Useful Life (EUL) of the Energy Efficiency Project, in the absence of the Energy Efficiency Project.
7. **Comparison Group EM&V Method:** Asset Output quantification approach that is based on the differences in energy consumption patterns between a population of facilities with Energy Efficiency Projects in place and a comparison group of premises where those Energy Efficiency Projects have not been implemented. Examples of comparison group methods include randomized control trials (RCTs) and quasi-experimental methods.
8. **Compliance Year:** Time period (in month and years) defined by the compliance program for which an Instrument(s) may be retired.
9. **Deemed Savings EM&V Method:** An Asset Output quantification approach that applies an estimated average annual Asset Output for a single unit of an installed demand-side Energy Efficiency Project that has been developed from data sources (such as prior metering studies) and analytical methods widely considered acceptable for the measure; and is applicable to the situation and conditions in which the measure is implemented. Individual parameters or calculation methods also can be deemed, including EUL values.
10. **Deemed Verified:** Final Asset Output data that has been reviewed and certified. All data used to support Instrument creation must first achieve this status.
11. **Default:** Tampering with or destroying the NEER in any way, falsifying data, failing to pay any fees, or any other violation per the Terms of Use ([Appendix 4.1](#)).
12. **Direct Measurement and Verification EM&V Method:** An Asset Output quantification approach that uses onsite observations, engineering calculations, statistical analyses, and/or computer simulation modeling using on-site measurements to determine savings from an individual Energy Efficiency Project.
13. **Disclosing Party:** The party that asserts that specific information is business confidential information and should therefore not be disclosed publicly.



14. **Dispute Report:** A form that is completed by a NEER Account Holder if it cannot independently resolve a dispute with another NEER Account Holder or third party. This report will be sent to the NEER Administrator and NEER Governing Body for review.
15. **Due Date:** Particular day or time period in which a NEER Account Holder must make a payment of a fee(s).
16. **Effective Useful Life (EUL):** The duration of time an Energy Efficiency Project is anticipated to remain in place and operable with the potential to save energy.
17. **Fee(s):** A payment or payments that a NEER Account Holder must pay for services or to have or maintain access to the NEER.
18. **Indemnified Party:** An individual or individuals including the NEER Administrator, its subsidiaries and affiliates and each of their respective owners, trustees, partners, members, officers, directors, employees, agents and representatives to which a NEER Account Holder agrees to cover losses or expenses for violations by the NEER Account Holder, its Authorized Account Representative, Alternate-Authorized Account Representative or Account Users against any and all claims related to the violation of any of the NEER Operative Documents.
19. **Losses:** Expenses arising out of attorney fees and court costs, in the case of indemnification.
20. **M&V Reporting Period:** The reporting period that the M&V report covers as defined by a Client Jurisdiction or other reporting period.
21. **NEER Participant:** Any person who interacts with the NEER – an Asset Owner, Authorized Account Representative, Alternate-Authorized Account Representative or Account User.
22. **NEER Site:** The website through which the NEER can be accessed.
23. **Operating Rules:** Shortened way of expressing the NEER Principles and Operating Rules.
24. **Operative Documents:** The Principles and Operating Rules, Terms of Use and Privacy Policy.
25. **Petition for Inquiry:** A request submitted to the NEER Administrator regarding and/or challenging a claim to exclusivity and/or ownership asserted by a NEER Account Holder in an Attestation Disclosure.
26. **Petitioner:** The individual who submits a Petition for Inquiry regarding an exclusivity or ownership Attestation Disclosure.
27. **Random Error:** Errors occurring by chance that may cause Asset Output values to be inconsistently overestimated or underestimated, and may result from a change in energy use due to unaccounted-for factors that affect energy use. The magnitude of random error can be quantified based on the variations observed across different units.
28. **Reinstatement:** Reopening an Account or re-registering an Asset after such Account or Asset had been terminated by the NEER Account Holder or NEER Administrator.
29. **Reinstatement Fee:** A payment by the NEER Account Holder associated with reinstatement of an Account or Asset that had been terminated by the NEER Account Holder or NEER Administrator.
30. **Reporting Year:** A period of time specified in a range of months and years that is defined by a specific certification program or NEER Account Holder for voluntary purposes, for which an Instrument(s) may be retired.
31. **Serial Block End:** A number in the NEER serial code to identify the last Instrument in a block of Instruments.
32. **Serial Block Start:** A number in the NEER serial code to identify the first Instrument in a block of Instruments.
33. **Site Identifier:** The number in a NEER Serial Number that identifies the geographic location of an Asset.
34. **Software:** The program used to operate the NEER.
35. **T&D:** Transmission and Distribution
36. **T&D Losses:** The difference between the quantity of electricity that serves a load (measured at the busbar of the generator) and the actual electricity use at the final distribution location (measured at the on-site meter).
37. **T&D Measures:** Energy Efficiency Projects intended to improve the efficiency of the electrical T&D system by decreasing electricity losses on the system.

## Appendix 4.1 Terms of Use

The following are the Terms of Use for the National Energy Efficiency Registry (NEER).

### 1. Capitalized Terms; Definitions

Any capitalized terms herein that are not otherwise defined in the NEER Principles and Operating Rules are defined in the introductions to appendices, the “Appendix Definition List.”

### 2. Acceptance of Terms

The use by you and your Account Users of the NEER and the NEER website located online at NEERRegistry.org (NEER Site) is subject to the following Terms of Use, which constitute a binding contract between you (the NEER Account Holder [NEER-AH]) and your Account Users as users of the NEER and the NEER-Administrator (NEER-Admin). By using or accessing the NEER, you accept and agree to be bound by these terms of use as modified from time to time in accordance with the terms hereof, and you agree to take affirmative responsibility for the compliance of your Account Users with these Terms of Use. You may review the current version of the Terms of Use at any time at the NEER Site. Continued use and access of the NEER by you and/or your Account Users after modification of the Terms of Use signifies your agreement to be bound by the modified Terms of Use, and your agreement to take affirmative responsibility for the compliance of your Account Users with these modified Terms of Use.

When using the NEER, you shall be subject not only to the Terms of Use but as well to any rules, guidelines and/or operating rules, including but not limited to the NEER Principles and Operating Rules (Operating Rules), the NEER Fee Schedule, or other applicable guidelines, posted on the NEER Site. All such rules, schedules and guidelines, each as modified or restated from time to time, are incorporated by reference into these Terms of Use. If you do not agree to these Terms of Use, as further defined by these incorporated rules, schedules and guidelines, you and your Account Users may not access or otherwise use the NEER software.

### 3. Description of Service

- a. The NEER provides an electronic tracking system to create, transfer, track, manage, review and retire NEER Certificates and Single Attribute Instruments (together, Instruments). If its registration is accepted by the NEER-Admin, the NEER-AH may have an Account in the NEER in which it can hold Assets and Instruments; or it may have a Restricted Account where it can enter data on behalf of an Energy Efficiency Provider (EE Provider), verify data on behalf of an EE Provider, or review documents and reports. Instruments will represent the Attribute(s) associated with one unit of Asset Output by an Asset registered within the NEER, and recorded onto a NEER Certificate, and a Single Attribute Instrument(s), as qualified, with a unique Serial Number. General NEER-AHs will have the option to import Instruments from other registries not operated or administered by the NEER-Admin; both General and Asset-only NEER-AHs will have the option to export Instruments to other registries. As further described in the Operating Rules, the data collected and reported from the NEER include, but are not limited to:
  - i. Dynamic Data provided to the NEER-Admin by a Qualified Reporting Entity (QRE), or self-reported, in each case as provided in the Operating Rules; and
  - ii. Static Data provided by the NEER-AH, its related Account Users or other participants in the NEER and their related Account Users (collectively, the NEER Participants) such as project type and location.
- b. The NEER is an assembly of data regarding EE Projects, or Assets, and their Asset Output. Any issues or disputes that may arise between two or more NEER-AHs, or between one or more NEER-AHs and third parties from the use of the NEER or the data contained in it shall be addressed between the NEER-AHs and/or third parties. Neither the NEER-Admin nor the NEER

Governing Body (NEER-GB) shall have any liability with respect to any such issues. The NEER-Admin reserves the right to dispose of any disputed Instrument by interpleader or other suitable action in the event of controversy and to deposit any Instruments or other items subject of the interpleader action with the relevant arbitral panel. For information on arbitration, see *Section 25* on Governing Law and Dispute Resolution.

- c. In connection with transfers allowed under (a), the NEER-Admin may be required to receive or transmit Instruments or their equivalents on your behalf. In that case, your instruction to the NEER-Admin to receive such import or transmit such export shall constitute your authorization for the NEER-Admin to so act. The NEER-Admin's actions in facilitating such exchanges between the NEER and other electronic tracking systems shall be covered by the liability limitation and indemnification provisions of *Sections 16 and 18* hereof.
- d. Restricted Accounts include Verifier and Jurisdiction Accounts. These Accounts, and the NEER-AHs thereof, may not register Assets or hold Instruments in the NEER. NEER Participants seeking a dual role in the NEER, such as utilities acting as both EE Providers and QREs, must register as a General Account Holder. Upon applying to be a NEER-AH, it is at the sole discretion of the NEER-Admin to approve or deny the application. Registrants may re-apply until the NEER-Admin approves the sufficiency of the documents provided in the application.
- e. Upon applying to be a NEER-AH, it is at the sole discretion of the NEER-Admin to approve or deny the application. The NEER-Admin reserves the further right, in its sole discretion, to modify, augment, segment, reformat, reconfigure or otherwise alter at any time the content or methods of transmission of the NEER or the Operative Documents and create new types or versions of the NEER and the Operative Documents. The NEER-Admin shall not be required to comply with any provision of any Operative Document to the extent that NEER-Admin determines in its reasonable discretion that such compliance would have a material adverse effect on the NEER; provided that NEER-Admin shall report any such deviation to NEER-AHs within 30 calendar days after such non-compliance first occurs. NEER-Admin shall provide NEER-AHs with at least 60 calendar days' prior notice of material changes to the NEER or the Operative Documents, which may be given by any means including, without limitation, posting on the NEER Site, or by email or conventional mail. Such material changes shall be effective upon the date set forth in the notice. All other changes shall be effective upon their being posted on the NEER Site.

#### 4. Account Users

- a. The rights and obligations of these Terms of Use shall apply to the NEER-Admin and NEER-AHs (together, the Parties) and run to their successors in interest and authorized assigns. The NEER-AH shall ensure that its Authorized Account Representative (AAR) and Alternate-Authorized Account Representative (Alternate-AAR) and/or any other individuals to whom it has provided access to the NEER (Account Users) agree to comply with the Operative Documents and these Terms of Use.
- b. The NEER-AH acknowledges and agrees that the rights and licenses provided under these Terms of Use and the Operative Documents are solely for the benefit of NEER-AH and are to be exercised only in connection with the NEER-AHs and its AAR, Alternate-AAR and Account Users' use of the NEER.

#### 5. Ownership and Use of Data and the NEER

- a. The NEER-AH acknowledges that (i) business confidential information, as defined in *Section 14(b)* hereof, is, and shall remain, the exclusive property of the NEER Participant who submitted it or on whose behalf it was submitted, and (ii) the NEER-Governing Body is and shall remain the

sole owner of all data comprising the NEER (except as provided in *Section 14 [d]* hereof) and of the NEER operating system, including any components, modifications, adaptations and copies thereof. Without limiting any of the foregoing, the NEER-AH further acknowledges and agrees that any and all software used in providing, accessing (other than commercially available third party internet browsers) or using the NEER (Software) is proprietary software of the NEER-Admin.

Except as provided herein, the NEER-AH shall not obtain, have or retain any right, title or interest in or to the NEER or the Software or any part thereof. The NEER-AH acknowledges and agrees that NEER-Admin is, and shall remain, the sole owner of any registration data required to access or use the NEER, including without limitation any and all intellectual property rights therein. The rights granted to the NEER-AH are solely defined by these Terms of Use and other Operative Documents as in effect from time to time and include, but are not limited to, permission to use the NEER as set forth herein and therein. The NEER-AH's rights under these Terms of Use do not include a transfer of title or any other ownership interest in the NEER, its content or any part thereof to the NEER-AH. The NEER-AH agrees not to contest or challenge NEER-Admin's ownership of the data comprising the NEER, the NEER, the Software and associated intellectual property rights and not to take any action that would infringe, misappropriate, constitute unfair competition with respect to, or otherwise violate NEER-Admin's rights in the data comprising the NEER, the NEER, the Software or associated intellectual property rights.

- b. Except as otherwise provided in the Operating Rules and *Section 14(d)* hereof, the NEER-AH acknowledges that once the NEER-AH transmits data to the NEER, such data becomes the property of NEER-Admin. Except in accordance with NEER-Admin's normal operating procedures, data in the NEER, including business confidential information, cannot and will not be deleted, removed, or otherwise expunged or segregated, including in the event the NEER-AH terminates its use of the NEER or any Account or Sub-Account in the NEER or is terminated pursuant to *Section 10*. To the extent any data submitted by or on behalf of the NEER-AH is and remains business confidential information, the NEER-AH grants NEER-Admin a perpetual, irrevocable, worldwide, royalty-free and non-exclusive license to retain and use such data in the NEER, subject to the obligations set forth in these Terms of Use applicable to such business confidential information.
- c. The NEER-AH acknowledges that the data transmitted by the NEER is derived from proprietary and public third party sources, including but not limited to data from other NEER Participants, including EE Providers and QREs. The NEER-AH will not use the NEER for any unlawful purpose or in an unlawful manner. The NEER-AH shall prevent the use or copying of the NEER and any other supporting materials by the NEER-AH's AAR, Alternate-AAR and Account Users except as permitted by these Terms of Use.
- d. The NEER-Admin grants the NEER-AH non-exclusive permission to access, retrieve and download data from the NEER subject to the Operative Documents, which shall not be effective until (i) the NEER-AH has: (1) accepted these Terms of Use on the NEER Site, (2) paid all applicable Fees due, and (3) completed and submitted to NEER-Admin the online registration available on the NEER Site, and (ii) NEER-Admin, in its sole discretion, has accepted the NEER-AH's application. The NEER-AH will take all appropriate steps and precautions to safeguard and protect the access, use and security of the NEER and the NEER-AH's User access information from unauthorized Users.
- e. The NEER-Admin reserves all rights in the NEER not expressly granted to the NEER-AH in these Terms of Use.

- f. To NEER-Admin's actual knowledge, the Software does not infringe any intellectual property rights of third parties.

6. Ownership of Instruments

Please refer to the language in [Appendix 6.5.1.3 "NEER Attestation of Ownership"](#) for details on Ownership of Assets. Instruments created as a result of Asset Output will be directed to the Account at the discretion of the NEER-AH that registered the Asset. The NEER-AH acknowledges that the NEER-Admin shall not have any liability in connection with any misrepresentation by a NEER-AH relating to the ownership of any Asset or Instrument in any Account or Sub-Account held by a NEER-AH.

7. Fees

(TBD).

8. Payments and Taxes

(TBD).

9. Late Payments

(TBD).

10. Term and Termination

- a. These Terms of Use become operative on the date on which the NEER-AH indicates that the NEER-AH agrees with and accepts the Terms of Use and shall continue in effect until NEER-Admin or the NEER-AH terminates access to the NEER pursuant to *Section 10(b), (c) or (d)* hereof.

Note: All actions may be brought as a dispute to the NEER-GB. See *Section 25* in the Terms of Use and [Section 11](#) in the Operating Rules.

- b. Termination by the NEER-Admin.
  - i. Prior to accepting your application to become a NEER-AH, the NEER-Admin may in its sole discretion reject your registration and terminate your access to the NEER immediately.
  - ii. The NEER-Admin may terminate the NEER-AH's access to the NEER upon giving 15 or 30 calendar days' notice to the NEER-AH if the NEER-AH is in Default pursuant to *Section 11(a)(i)* hereof.
  - iii. The NEER-Admin may terminate the NEER-AH's access to the NEER immediately, in the event of any Default pursuant to *Sections 11(a)(ii) through (a)(ix)* hereof.
  - iv. The NEER-Admin may terminate the NEER-AH's access to the NEER, for any reason, by providing at least 15 or 30 calendar days' written notice to the NEER-AH. The NEER-AH's obligation to pay any and all Fees due under the Operative Documents and these Terms of Use at the time of termination of use shall survive such termination of use.
- c. Termination by the NEER-AH. The NEER-AH may terminate use of the NEER, for any reason, by providing at least 30 calendar days' written notice to the NEER-Admin. The NEER-AH's obligation to pay any and all Fees due under the Operative Documents at the time of termination of use shall survive such termination of use.
- d. Termination Required by Law. NEER-Admin shall terminate access to, or the NEER-AH shall cease use of, the NEER if required to do so by notification by a Jurisdiction of any Applicable Law, or by any order or other decision of a court of law, arbitral panel or governmental agency. At

least 30 calendar days' notice of said termination of access or cessation of use of the NEER shall be given by the Party terminating the access to, or ceasing the use of, the NEER under this subsection, unless a shorter notice period is required by Applicable Law or the relevant order or decision.

e. Effect of Termination.

- i. The terms of *Sections 5 (Ownership and Use of Data and the NEER)*, *7(Fees)*, *8 (Payments and Taxes)*, *9 (Late Payments)*, *10 (Term and Termination)*, *11(b) (Default; Remedies)*, *14 (Confidentiality)*, *16 (Limitation of Liability)*, *18 (Indemnification)*, *19 through 26* and any other provisions meant to survive termination or expiration of these Terms of Use, shall survive termination of the Terms of Use.
- ii. Upon termination of access to the NEER, any Instruments held in the NEER-AH's Account shall be forfeited. Prior to such termination being effective, the NEER-AH may retire such Instruments or transfer them to another NEER-AH's Account, in a manner consistent with the Operative Documents.

f. Reinstatement.

- i. Upon the request of the NEER-AH, the NEER-Admin, in its sole discretion, may reinstate the NEER-AH's access to the NEER after termination for the NEER-AH's Default, upon the NEER-Admin's determination that the NEER-AH has resolved such Default and upon receipt of the NEER-AH's full payment of all Fees due prior to the termination. The NEER-AH agrees to pay a reinstatement fee equal to the Fees which would have been due during the period in which the NEER-AH's Account(s) were terminated. The Reinstatement Fee shall be due prior to reinstatement of the NEER-AHs' access to the NEER.
- ii. NEER-Admin shall reinstate a NEER-AH's access to the NEER after termination for the NEER-AH's Default if directed to do so as a result of the outcome of a Dispute Resolution proceeding under these Terms of Use. Whether payment of a Reinstatement Fee is required in such an instance shall be determined as part of such Dispute Resolution.

11. Default; Remedies

a. Default. The occurrence of any of the following shall be considered a "Default":

- i. The NEER-AH fails to abide by or perform any of its duties or obligations under the Operative Documents as further defined by any incorporated rules, guidelines, and/or operating rules, other than those set forth below in *Sections 11(a)(ii) through (a)(ix)*, which default is not cured to the satisfaction of NEER-Admin in its sole discretion within 15 or 30 calendar days after notice is given to the NEER-AH specifying such default.
- ii. The NEER-AH fails to pay any of the Fees, or other charges due in accordance with the procedures set forth in *Sections 7, 8 and 9* above within 15 or 30 calendar days of their Due Date.
- iii. The NEER-AH, its AAR, Alternate-AAR or Account Users alter, tamper with, damage or destroy (1) the NEER or any portion thereof, or (2) the data of other NEER Participants.
- iv. The NEER-AH uses the NEER in any manner that, directly or indirectly, violates any Applicable Law.
- v. All or substantially all of the NEER-AH's Assets are attached or levied under execution (and the NEER-AH does not discharge the same within 15 or 30 calendar days thereafter); a petition in bankruptcy, insolvency, for reorganization or a similar arrangement is filed by or against the NEER-AH (and the NEER-AH fails to secure a stay or discharge thereof within 15 or 30 calendar days thereafter); the NEER-AH is insolvent and unable to pay its debts as they become due; the NEER-AH makes a general assignment for the benefit of creditors; the NEER-AH takes the benefit of any insolvency

action or law; the appointment of a receiver or trustee in bankruptcy for the NEER-AH or its Assets if such receivership has not been vacated or set aside within 15 or 30 calendar days thereafter; or, dissolution or other failure to exist of the NEER-AH if the NEER-AH is an entity.

- vi. The NEER-AH falsifies, misrepresents or fails to report changes within 15 or 30 calendar days any data or other information input into the NEER by the NEER-AH or otherwise provides incorrect data or other information to the NEER in contravention of these Terms of Use.
  - vii. The NEER-AH makes any false or inaccurate representations required by these Terms of Use.
  - viii. The NEER-AH violates its confidentiality obligations set forth in *Section 14* hereof.
  - ix. The NEER-AH receives written notice of a violation of the performance of any particular material term or condition of the Operative Documents 3 or more times during any 12 month period, regardless of whether such violations are ultimately cured.
- b. Remedies. Upon the occurrence of any Default, the NEER-Admin shall have the following rights and remedies, in addition to those stated elsewhere in the Operative Documents and those allowed by Applicable Law or in equity, any one or more of which may be exercised without further notice to the NEER-AH:
- i. The NEER-AH acknowledges that money damages would not adequately compensate the NEER-Admin in the event of a breach by the NEER-AH of its obligations hereunder and that injunctive relief may be essential for the NEER-Admin to adequately protect itself hereunder. Accordingly, the NEER-AH agrees that, in addition to any other remedies available to NEER-Admin, including but not limited to any monetary damages, NEER-Admin shall be entitled to seek injunctive relief in the event the NEER-AH is in breach of any covenant or agreement contained herein.
  - ii. Upon termination of the use of the NEER, the NEER-AH shall be obligated to pay to NEER-Admin all monies due to it, which in the case of a termination as a result of a Default shall include attorneys' fees incurred to enforce NEER-Admin's rights under the Operative Documents, and which in any event shall include any interest and costs and expenses due hereunder.
  - iii. The NEER-AH acknowledges that the NEER-Admin may notify transferees of any erroneous Instruments, suspend the NEER-AH's Account or prohibit the NEER-AH's participation in the NEER.
- c. Nonwaiver of Defaults. The failure or delay of the NEER-Admin in exercising any of its rights or remedies or other provisions of the Operative Documents shall not constitute a waiver thereof or affect the NEER-Admin's right thereafter to exercise or enforce such right or remedy or other provision. When the NEER-Admin has explicitly waived a Default, no such waiver shall be deemed to be a waiver of any other Default. The NEER-Admin's receipt of less than the full amount of Fees, Reinstatement Fees or other amounts due shall not be construed to be other than a payment on the account then due, nor shall any statement on the NEER-AH's check or any letter accompanying the NEER-AH's check be deemed an accord and satisfaction.

## 12. Intellectual Property

The NEER name and brand and any and all content of the NEER, are protected by copyright and/or other intellectual property laws and any unauthorized use of such intellectual property or information or the NEER may violate such laws related to their protection. Except as expressly provided herein and in the other Operative Documents, none of the NEER-Admin or any of its affiliates grants any express or implied



right or license of any kind to the NEER-AH under any patents, copyrights, trademarks, or trade secret information with respect to such intellectual property and/or information and/or the NEER.

Except as expressly provided by copyright law, or the Operative Documents, the NEER-AH may not copy, distribute, modify, publish, sell, transfer, license, transmit, display, participate in the transfer or sale of, or create derivative works of, any of such intellectual property or information or the NEER, either in whole or in part, other than:

- a. reports or other data created for use by or otherwise disseminated to the NEER-AH (including the AAR, Alternate-AAR and Account Users) under the Operating Rules;
- b. such reports, data, or information as may be required or compelled by Applicable Law;
- c. information that it has provided to the NEER, whether or not it is business confidential information; or
- d. such reports, data, or information as the NEER-Admin may agree in its sole discretion.

Any authorized use of the NEER's logo and NEER-Admin's trademarks shall be precisely as described in the Operative Documents, and the NEER-AH shall not alter such logo or trademarks in any respect (including without limiting changing the color scheme thereof). The NEER-AH acknowledges they do not acquire any ownership rights by downloading copyrighted material.

### 13. Representations and Warranties

Throughout the term of these Terms of Use, including without limitation upon each creation, transfer or retirement of an Instrument by the NEER-AH, the NEER-AH represents and warrants to NEER-Admin that:

- a. If other than a natural person, the NEER-AH is duly organized, validly existing, and in good standing under the laws of the jurisdiction of its formation;
- b. The NEER-AH meets all of the requirements for participation in the NEER, as set forth in the Operative Documents;
- c. The NEER-AH has all corporate and other authority and all regulatory and other consents, approvals and authorizations necessary for it to legally (i) enter into and perform its obligations under the Operative Documents and (ii) engage in all of its activity (including but not limited to the creation, receipt and transfer of Instruments) on or relating to the NEER;
- d. The signatory of these Terms of Use has the authority to execute these Terms of Use on behalf of the NEER-AH, and that upon signature these Terms of Use are binding on and enforceable against the NEER-AH in accordance with their terms;
- e. NEER-AHs who are EE Providers will only use the NEER for creating, importing (for General Account Holders only), transferring and retiring Instruments that are either (i) attributable to the Assets included in the NEER or (ii) imported into the NEER in the manner specified by the Operative Documents;
- f. NEER-AHs who are Client Jurisdictions with a Jurisdiction Account will only use the NEER for tasks such as reviewing and approving documents, as requested, for the purpose of allowing the creation of Instruments for their Specific Compliance / Certification Program (SCCP). Jurisdiction Account Holders may also review reports;

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- g. NEER-AHs who are Accredited Independent Verifiers (AIVs) or QREs with a Verifier Account will only use the NEER for the purpose of verifying and approving data on behalf of an EE Provider, or entering Dynamic Data on behalf of an EE Provider, respectively;
- h. General and Asset-only Account Holders have not registered and will not register any Assets simultaneously both in the NEER and in any other system that tracks the Attributes related to such Assets, nor will any transaction of an Asset's Attributes be conducted outside of the NEER if the Instruments associated with that Asset are maintained within the NEER;
- i. The NEER-AH will not retire, sell, claim or represent elsewhere or use any of its Instruments to satisfy obligations in any jurisdiction or otherwise without reporting such disposition within the NEER;
- j. The NEER-AH has been approved through the NEER Attestation of Ownership as having sole ownership rights to the Attributes of the Asset;
- k. The NEER-AH has been approved through [Appendix 6.5.1.2 \(a\) "NEER Attestation of Exclusivity"](#) as being the only entity reporting and claiming Asset Output for that Asset in any registry;
- l. All data and other information provided to the NEER-Admin by the NEER-AH are either owned legally and beneficially by the NEER-AH or the NEER-AH otherwise has the right to provide such data and other information, and all such data and other information are true and correct in all material respects.
- m. Should any changes need to be made to Static Data after Asset registration in the NEER, the NEER-AH must notify the NEER-Admin by completing an online static data amendment request ([Appendix 6.5.1](#)) when something changes in the Asset Static Data not more than thirty (30) calendar days after the change occurs.

### 14. Confidentiality

- a. The NEER's selection, arrangement and compilation of data may comprise confidential, market sensitive and trade secret information of the NEER Participant. The NEER-Admin agrees (i) to use and maintain information provided by the NEER-AH in accordance with the NEER's Privacy Policy and (ii) not to knowingly use or disclose business confidential information (as defined below) provided by the NEER-AH except as authorized by the NEER-AH or these Terms of Use, or when the NEER-AH requests and authorizes the transfer of Instruments to another registry not controlled and operated by the NEER-Admin. The NEER-AH agrees not to use or disclose the information contained in the NEER, including any other NEER-AH's business confidential information, except as authorized by the Operative Documents. The obligations of confidentiality in these Terms of Use shall survive its termination without limitation in duration for so long as information continues to meet the definition of business confidential information.
- b. As used in these Terms of Use, the following information is deemed "business confidential information"
  - i. Asset Output of each Asset;
  - ii. Street address of the Asset (if applicable);
  - iii. Total number of Instruments in the NEER-AH's Account and any Sub-Account thereof;
  - iv. The amount and timing of specific Instrument transfers, including transfers from one NEER-AH to another and transfers among the Sub-Accounts of a NEER-AH; and

- V. Those portions of communications between the NEER-AH and NEER-Admin regarding the NEER that contain any of the aforementioned information that would be treated as business confidential information.

*Provided, however,* that business confidential information does not include any information that can be established by written documentation: (i) to have been publicly known prior to disclosure of such information by the disclosing Party (Disclosing Party) to the receiving Party (Receiving Party); (ii) to have become publicly known, without fault on the part of the Receiving Party, subsequent to disclosure of such information by the Disclosing Party to the Receiving Party; (iii) to have been received by the Receiving Party at any time from a source, other than the Disclosing Party, rightfully having possession of and the right to publicly disclose such information; (iv) to have been independently developed by employees or agents of the Receiving Party without access to or use of such information disclosed by the Disclosing Party to the Receiving Party; (v) to be common technical information or know-how readily available in literature; (vi) to be required to be disclosed by Applicable Law, including but not limited to information that must be provided to any governmental entity to confirm compliance with any statute or regulation, administrative proceeding, administrative or court order or discovery, provided that both Parties take such reasonable actions as necessary to ensure that such information is disclosed in as limited a manner possible; (vii) to be already within the knowledge of the Receiving Party at the time of disclosure, which information is not subject to a confidentiality agreement; or (viii) to be information the NEER-Admin is otherwise permitted to disclose under the Operative Documents.

- c. Business confidential information may be aggregated with other information in the NEER and included in public reports as described more fully in the Operating Rules, so long as it is sufficiently aggregated such that a third party reviewer could not determine the portion of such aggregated information that is business confidential information of a particular NEER-AH.
- d. Business confidential information is the sole and exclusive property of the NEER Participant who provided the information to the NEER or on whose behalf the information was provided, and shall not be used by the NEER-AH for any purpose other than the purposes set forth in the Operative Documents.
- e. If the NEER-AH obtains access to data in the NEER that: (i) is not data provided or owned by the NEER-AH; (ii) is not part of a publicly available NEER report; and the NEER-AH is not otherwise authorized to use, then, regardless of whether such data is otherwise considered business confidential information under these Terms of Use, the NEER-AH shall immediately notify the NEER-Admin that they have obtained such access; and not disclose, disseminate, copy, or use any such data.
- f. If the NEER-Admin determines something is not business conditional information notwithstanding that designation, that NEER-Admin may notify the NEER-AH and then release in accordance with the Operative Documents.
- g. Except as specifically set forth in this *Section 14*, the NEER-Admin shall have no obligation to protect or maintain the confidentiality of any information provided by the NEER-AH to the NEER-Admin, and the NEER-AH expressly consents to the disclosure of any such information that is not business confidential information hereunder.

## 15. Disclaimer of Warranty

- a. The data contained in the NEER has been gathered by the NEER-Admin from sources believed by it to be reliable, including but not limited to the NEER-AHs. The NEER-Admin does not warrant that the information in the NEER is correct, complete, current or accurate, nor does NEER-Admin warrant that the Software will be error-free or bug-free. The NEER-Admin has no obligation to audit, validate or otherwise verify any information contained in the NEER.
- b. The NEER is provided “as is,” and the NEER-Admin makes no representations or warranties, express or implied, with respect to the Operative Documents or the adequacy or performance of the NEER, and the NEER-Admin hereby disclaims to the extent permitted by law any such warranties, including but not limited to warranties of merchantability, non-infringement, title or fitness for a particular purpose or any implied warranties arising from any course of dealing, usage or trade practice. The NEER-Admin does not warrant that the services provided hereunder shall be uninterrupted, error-free, or completely secure, or that the provision of such services shall always be executed without errors or omissions.
- c. The NEER-Admin shall not be responsible for the acts or omissions of any the NEER-AH or from whom data is obtained for inclusion on the NEER.
- d. The NEER-AH is solely responsible for the protection, security and management of usage and security of its computer network. The NEER-Admin shall not compensate the NEER-AH for damages incurred due to violations of the security of the NEER-AH's computer network, nor shall the NEER-AH make deductions or set-offs of any kind for Fees resulting therefrom.

#### 16. Limitation of Liability

The NEER-AH assumes full responsibility and risk of loss resulting from its use of the NEER and the NEER Site. The NEER-Admin's sole liability for the NEER, service disruption, performance or nonperformance by the NEER-Admin or in any way related to these Terms of Use, regardless of whether the claim for damages is based in contract, tort, strict liability, or otherwise, is limited, to the extent permitted by law, to an aggregate amount equal to the greater of (x) the Fees paid by the NEER-AH hereunder during the calendar year immediately preceding the date any such claim is or claims are made by the NEER-AH and (y) the Fees paid by the NEER-AH hereunder during the calendar year in which any such claim is or claims are made by the NEER-AH. The NEER-Admin shall not be liable for consequential, incidental, special, exemplary or other indirect damages regardless of cause, nor for economic loss, loss of use, loss of data, loss of business, personal injuries or property damages sustained by the NEER-AH or any third parties, even if the NEER-Admin has been advised by the NEER-AH or any third party of such damages. The NEER-Admin disclaims any liability for errors, omissions or other inaccuracies in any part of the NEER, or the reports, Instruments or other information compiled or produced by and from or input into the NEER. To the maximum extent permitted by law, the NEER-AH hereby releases and protects the NEER-Admin, any subsidiaries or other corporate affiliates thereof, their successors and assigns, agents, contractors, service providers and vendors from any and all liability with respect to any damages or injuries incurred by the NEER-AH as relates to the NEER.

#### 17. Logins, Passwords and NEER-AH IDs

The NEER-AH AAR and Alternate-AAR agree to assume sole responsibility for the security of any logins, passwords and NEER-AH IDs issued to them for accessing the NEER. The NEER-AH AAR or Alternate-AAR agrees to immediately notify NEER-Admin of any suspected unauthorized use of the NEER-AH's login(s), password(s), the NEER-AH ID(s) or Account or any other suspected breach of security.

#### 18. Indemnification

The NEER-AH agrees to defend, indemnify and hold harmless the NEER-Admin and its subsidiaries and affiliates and each of their respective owners, trustees, partners, members, officers, directors, employees,

agents and representatives (each an Indemnified Party) from and against any violations by the NEER-AH, its AAR, Alternate-AAR or its Account Users of any Applicable Law and against any and all claims (including third party claims), causes of action, whether in contract, tort or any other legal theory (including strict liability), demands, damages, costs, liabilities, losses and expenses (including reasonable attorneys' fees and court costs) of any nature whatsoever (Losses) arising out of, resulting from, attributable to or related to the use of the NEER by the NEER-AH, its AAR, Alternate-AAR or its Account Users, or the NEER-AH's, its AARs', Alternate-AARs' or its Account Users' violation of any of the Operative Documents, including, but not limited to, any Losses arising out of or related to: (a) any inaccuracy, error, or delay in or omission of (i) any data, information, or service, or (ii) the transmission or delivery of any data, information, or service; (b) any interruption of any such data, information, or service (whether or not caused by such Indemnified Party); or (c) any financial, business, commercial or other judgment, decision, act or omission based upon or related to the information or the NEER. Notwithstanding the foregoing, the NEER-AH shall not defend, indemnify or hold harmless an Indemnified Party from and against any Losses to the extent that the Losses are caused by the conduct of such Indemnified Party that an arbitral panel has determined amounted to gross negligence or willful misconduct. For additional information on arbitration, see *Section 25* on Governing Law and Dispute Resolution.

19. No Assignment, Transfer or Encumbrance by the NEER-AH

Neither any requirement set forth under an Operative Document nor any rights hereunder or thereunder may be assigned, sublicensed, encumbered, pledged, mortgaged or otherwise transferred by the NEER-AH, in whole or in part, whether voluntary or by operation of law, without the express prior written consent of the NEER-Admin, which consent shall not be unreasonably withheld, conditioned or delayed.

20. Relationship of Parties

Each Party is an independent contractor under these Terms of Use. No Party has the authority to execute documents that purport to bind the others, and nothing in these Terms of Use will be construed to constitute a joint venture, fiduciary relationship, partnership or other joint undertaking.

21. Force Majeure

No Party shall be deemed to have breached any provision of these Terms of Use as a result of any delay, failure in performance, or interruption of service resulting directly or indirectly from acts of God, network failures, acts of civil or military authorities, civil disturbances, wars, terrorism, energy crises, fires, floods, strikes or other labor disturbances, riots, interruptions in third party telecommunications or Internet equipment or service, other catastrophes, or any other occurrences which are beyond the claiming Party's reasonable control and which, by the exercise of due diligence, the claiming Party is unable to overcome or avoid or cause to be avoided; *provided, however*, that no such occurrences shall excuse the NEER-AH's obligation to pay Fees due hereunder by the applicable Due Date as set forth in *Section 7, 8 and 9*.

22. Severability

If any part of these Terms of Use is held to be unenforceable or illegal by an arbitration panel, court or governmental administrative agency, such holding shall not affect the validity of the other parts of the Terms of Use, which shall at all times remain in full force and effect.

23. Waiver

The waiver of a breach or the failure to require at any time performance of any provision of these Terms of Use will not operate or be interpreted as a waiver of any other or subsequent breach nor in any way affect the ability of any Party to enforce each and every such provision thereafter. The express waiver by any Party of any provision, condition or requirement of these Terms of Use shall not constitute a waiver of any future obligation to comply with such provision, condition or requirement.

## 24. Notices

All notices permitted or required under these Terms of Use shall be in writing and shall be delivered in person, by email, facsimile, or first class, registered or certified mail, postage prepaid, or by overnight courier service to the following addresses or such other address as either Party may specify in writing:

If to NEER-Admin:

Email: (TBD).

Address: (TBD).

If to NEER-AH:

To the address provided at the time of registration, as updated by the NEER-AH from time-to-time.

Service shall be effective on the earlier of actual receipt or the second business day after the calendar day of mailing via first class mail. For service of notice via facsimile, it shall be deemed received on the calendar day said notice was sent to the other Party. For service of notice via email, it shall be deemed received on the calendar day said notice was sent to the other Party.

## 25. Governing Law and Dispute Resolution

- a. These Terms of Use shall be governed exclusively by the laws of (State[s]) without regard to its/their rules on conflicts of law.
- b. The Parties shall first attempt in good faith to settle any controversy or claim arising out of or relating to these Terms of Use, or the breach thereof, or any other claim or controversy between the Parties arising out of the NEER (Dispute), by mediation administered by the American Arbitration Association (AAA) under its Commercial Mediation Procedures. At least 15 or 30 calendar days prior to initiating such mediation, the Party seeking to mediate (Demanding Party) shall give the other Party written notice describing the claim and the amount as to which it intends to initiate the action, as well as providing all supporting documentation available to the Demanding Party.
- c. Any Dispute that has not been resolved by mediation as provided herein within 15 or 30 calendar days after initiation of the mediation procedure shall be finally resolved by arbitration administered by the AAA under its Commercial Arbitration Rules and Supplementary Procedures for Online Arbitration. The arbitrator(s) will have no authority to award punitive damages nor any other damages not measured by a prevailing Party's actual damages, and may not, in any event, make any ruling, finding or award that does not conform to the terms and conditions of these Terms of Use. Neither any Party nor the arbitrator(s) may disclose the existence or results of any arbitration hereunder without the prior written consent of all Parties.
- d. Each Party shall be responsible for the payment of all of its costs associated with the resolution of said dispute in arbitration. If the dispute is not settled in arbitration, then it may be brought before a court of law. Such costs may include but are not limited to any filing fees, arbitrator fees, its attorneys' fees and other costs incurred in such proceeding, *except that* if a dispute is initiated in bad faith, as determined by the arbitrator(s), the Party initiating the

dispute shall be responsible for all of the other Party's defense costs, and provided further that NEER-Admin shall be entitled to payment of its costs and expenses, including without limitation attorneys' fees, to the extent set forth in *Sections 11(b)(ii) and 18*.

- e. The Parties agree that neither may bring a claim nor assert a cause of action against the other, in any forum or manner, more than 12 calendar months(s)/year(s) after the cause of action accrued, except where the Party could not have reasonably discovered the wrong giving rise to the claim within 24 calendar month(s)/year(s).

#### 26. Entire Agreement

The Operative Documents, including without limitation the Terms of Use, including any and all exhibits attached thereto and hereto, represent the entire agreement of the Parties with respect to the subject matter thereof and hereof and supersede any conflicting terms in any other prior or contemporaneous oral or written agreements and any and all other communication.



## Appendix 4.2 QRE Guidelines

### 1. Introduction

A Qualified Reporting Entity (QRE) in the National Energy Efficiency Registry (NEER) is an entity reporting Asset Output data to the NEER Administrator (NEER-Admin), consistent with the Qualified Reporting Entity Guidelines detailed in this appendix. QREs must have a signed agreement with the NEER-Admin. This appendix also contains the protocol for collecting and transferring generation data from a participating QRE to the NEER for the purposes of creating NEER Certificates and Single Attribute Instruments.

### 2. Qualified Reporting Entity Guidelines

As a QRE, the reporting party will adhere to the following guidelines:

- a. A QRE should create a General or Verifier Account in the NEER. The NEER-Admin will validate all information submitted along with the registration.
- b. Reported Dynamic Data should include the amount of Asset Output by the Energy Efficiency Project (EE Project), including the unit of measure for the Asset Output.
- c. Reported Dynamic Data should be inherently reliable and fully auditable.
- d. Reported Asset Output data should be consistent with all quality assurance/quality control (QA/QC) protocols as specified in the Asset Application.
- e. QREs should submit data to the NEER on the basis agreed upon between the QRE and the NEER Account Holder (NEER-AH) that has designated them as the QRE for their registered Asset(s).
- f. Aggregation is allowed by the NEER. Defer to the Client Jurisdiction for aggregation characteristic requirements, if seeking Single Attribute Instruments. See [Appendix 6.4 for Guidance for Aggregation of EE Projects](#).
- g. Sometimes, an entity that functions as a QRE may also be an EE Provider and/or own Instruments. In order to establish the integrity of the reporting, the group/affiliate that is responsible for reporting must qualify as independent from the part of the organization responsible for registration of EE Projects and retiring Instruments. This includes its affiliates engaged in marketing functions or Instrument retirement under the principles defined by the FERC's Independent Functioning and No Conduit Rules.<sup>6</sup> This separation should ensure that the QRE functions independently from the registering/retiring entity.
- h. Assets will adhere to regular internal and external validation and verification procedures that may include, but are not limited to:
  - i. An approved EM&V plan; and
  - ii. Auto Validation Check of Dynamic Data.
- i. Upon request, QREs will provide the NEER-Admin with regular internal and external audit and verification reports that may include, but are not limited to the use of:
  - i. Internal Audit Process;
  - ii. Accredited Independent Verifier (AIV) checks; and,
  - iii. Balancing Authority's annual audit results.

### 3. Qualified Reporting Entity Candidates

QREs for the NEER may include, but are not limited to:

- a. Balancing Authorities

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<sup>6</sup> See *Standards of Conduct for Transmission Providers*, Docket No. RM07-1-000, Order No. 717, 125 FERC ¶ 61,064, 18 CFR §§ 358.5-6 (Issued October 16, 2008).

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- b. Electric Service Providers
  - c. Public Utility Commissions
  - d. Interconnecting Utilities
  - e. Scheduling Coordinators
  - f. Independent Third-Party Meter Readers
  - g. Accredited Independent Verifiers
4. File Description
- a. Reporting Entity File Description
  - b. *(TBD)*. (data elements and file content structural elements).
5. Field Definitions
- a. *(TBD)*. (data contained in each extract file accepted by NEER).
6. File Loading

All files will be loaded into NEER using an active NEER Login and password that is associated with an active open Verifier or General NEER Account type.

### Loading Dynamic Data Extract File for NEER Assets

- a. Only NEER-AHs that are designated type “QRE” or “NEER-Admin” have the ability to load the Dynamic Data Extract File.
- b. *(TBD)*. (more logistics for data entry on NEER Site, including tables describing Asset File Format).

## Appendix 4.3 NEER Governance Charter

### Establishment and Authority

The Board of Directors of the National Energy Efficiency Registry (NEER) is to be established under the auspices of an independent organization and will be responsible for identifying the necessary resources to set-up and develop the NEER.

### Purpose

The purpose of the NEER is to:

1. Provide efficient and effective infrastructure to states, utilities, private companies and others to assist in tracking the output of energy efficiency projects and other demand resources within the United States.
2. Help states, utilities, private companies and others demonstrate progress towards energy goals and potential compliance with existing and future state and federal environmental regulations.

### Governance Objectives

1. Ensure balance and transparency of governance.
2. Provide strategic review of NEER technology, business practices and services.
3. Provide oversight to ensure that NEER services, goals and mission are relevant and sufficiently flexible to stay relevant in changing environments and that the NEER has the resources to implement the strategic plan and grow and expand its users and services.
4. Provide operational flexibility for the NEER director and staff.
5. Ensure interests of states and significant stakeholders are carefully and sufficiently considered in NEER governance, strategic plans, and operations.

### Governance Structure

The NEER shall be governed by a Board of Directors and sub-committees, and run by an Executive Director. While the Board of Directors has the ultimate responsibility to approve and authorize implementation of the actions within its purview, it will be assisted by sub-committees authorized by these procedures, as may be amended or changed. The following sub-committees are required: Finance and Audit Committee, Operations Committee. Other committees which may be created, but are not required, include, Strategic Guidance Committee, an Outreach and Development Committee and an Accreditation Committee.

### Board of Directors

#### Responsibilities

The Board of Directors shall be responsible for the overall strategy and governance of the NEER and the ongoing review of the vision and mission of the NEER. Specific responsibilities include:

- Review and approve the annual budget;
- Review and approve all major expenditures in excess of 10% of the current year operating budget;
- Create and approve periodic strategic plans;
- Review and approve recommendations from sub-committees; and,
- Hire the NEER Executive Director.

#### Membership

The Board of Directors shall have eleven (11) members as follows: one (1) individual member employed by a state agency to be appointed by and represent states; three (3) additional individual members employed either by a state agency or associations of states (including associations of state agencies or

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officials) to be appointed by and represent states; four (4) individual members appointed by and representing private or public energy actors such as utilities and energy service companies (ESCOs); and three (3) individual members appointed by, and to represent, federal agencies or multi-state or national non-governmental organizations.

### Specific Board of Directors Procedures for Meetings and Voting

The general procedures for all committees will govern Board of Directors meetings, except as otherwise provided in this Section.

The Board of Directors shall meet no less than two times per year, at least every six months, at a location, date and time to be determined by the Executive Director.

Actions taken or adopted on the following matters shall require an affirmative vote of at least eighty percent (80%) of the Board Members or their authorized attendees present in attendance if taken at a duly authorized meeting, or unanimous written consent:

- Change in mission or goals of the NEER;
- Change in stakeholder groups to be represented on Board of Directors;
- Increase or decrease in the authorized number of Board of Directors members; and,
- Any change to governance procedures or rules, except that additional committees may be authorized by a majority vote.

### Finance and Audit Committee

#### Responsibilities

A Finance and Audit Committee shall be established to review and approve financials including budgets, investments, and resource allocation, and shall make recommendations based on those reviews to the Board of Directors for further action. Specific responsibilities include:

- Review and make recommendations to the Board of Directors related to the annual budget;
- Review and make recommendations to the Board of Directors related to all expenditures in excess of 10% of the current operating budget; and,
- Conduct and oversee annual financial audits.

#### Membership

The Finance and Audit Committee shall have five (5) members, at least one (1) individual committee member employed by a state agency or association representing states (including associations of state agencies or officials) and only two (2) of which may be current members of the Board of Directors or members of any other active committee; and three (3) members must be independent.

### Specific Finance and Audit Committee Procedures for Meetings and Voting

The general procedures for all committees will govern Finance and Audit Committee meetings, except as otherwise provided in this Section.

The Finance and Audit Committee shall meet no less than one time per year, at a location, date and time to be determined by the Executive Director.

### Operations Committee

#### Responsibilities

The Operations Committee shall be responsible for the overall operation and administration of NEER services. Specific responsibilities include:

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- Review and approve material changes to platform and services;
- Review and approve material changes to NEER Operating Rules; and,
- Review and approve significant changes in fee amounts and structure.

### Membership

The Operations Committee shall have five (5) members as follows: one (1) individual committee member employed by a state agency representing states, two (2) additional individual committee members employed by state agencies or associations of states (including associations of state agencies or officials) to represent states, one (1) individual committee member to be appointed by and represent private or public energy actors such as utilities and ESCOs, and one (1) individual committee member appointed by and to represent a federal agency or multi-state or national non-governmental organization.

### Specific Operations Committee Procedures for Meetings and Voting

The general procedures for all committees will govern Operations Committee meetings, except as otherwise provided in this Section.

The Operations Committee shall meet no less than one time per year at a location, date and time to be determined by the director.

## **Strategic Guidance Committee**

### Responsibilities

The Strategic Guidance Committee shall be responsible for the oversight of strategic planning and monitoring business and regulatory trends, and making recommendations to the Board of Directors as to changes in the NEER mission, goals and strategy based on trends.

### Membership

The Strategic Guidance Committee shall have seven (7) members as follows: two (2) individual committee members employed by state agencies or associations of states (including associations of state agencies or officials) to represent states; four (4) individual committee members to be appointed by and represent private or public energy actors such as utilities and ESCOs; and one (1) individual committee member to be appointed by and to represent of a federal agency or a multi-state or national non-governmental organization.

### Specific Strategic Guidance Committee Procedures for Meetings and Voting

The general procedures for all committees will govern Strategic Guidance Committee meetings, except as otherwise provided in this Section.

The Strategic Guidance Committee shall meet no less than one time per year at a location, date and time to be determined by the director.

## **Outreach and Development Committee**

### Responsibilities

The Outreach and Development Committee shall assist staff in business and product development and ensure sufficient funding for NEER operations and services.

### Membership

The Outreach and Development Committee shall have five (5) members as follows: one (1) individual committee member employed by a state agency or association of states (including associations of state

agencies or officials) to represent states; two (2) individual committee members appointed by and to represent private or public energy actors such as utilities and ESCOs; and two (2) individual committee member to be appointed by and to represent federal agency or multi-state or national non-governmental organization.

#### Specific Outreach and Development Committee Procedures for Meetings and Voting

The general procedures for all committees will govern Outreach and Development Committee meetings, except as otherwise provided in this Section.

The Outreach and Development Committee shall meet no less than one time per year at a location, date and time to be determined by the director.

### **Accreditation Committee**

#### Responsibilities

The Accreditation Committee shall be responsible for the oversight of NEER-recognized Accredited Independent Verifiers.

#### Membership

The Accreditation Committee shall have five (5) members as follows: one (1) individual committee member employed by a state agency or association of states (including associations of state agencies or officials) to represent states; two (2) individual committee members appointed by and to represent private or public energy actors such as utilities and ESCOs; and two (2) individual committee members appointed by and to represent the accreditation/certification community.

#### Specific Accreditation Committee Procedures for Meetings and Voting

The general procedures for all committees will govern Accreditation Committee meetings, except as otherwise provided in this Section.

The Accreditation Committee shall meet no less than one time per year at a location, date and time to be determined by the director.

### **Board and Committee Meetings, Vacancies, Attendance and Voting**

This Section shall apply to the Board of Directors and all committees.

#### Term

Board and Committee Members shall serve two-year terms, and shall be limited to three consecutive terms.

**Member Selection, Roles and Vacancies.** Initial Board Members shall be appointed by the NEER Project Team with the goal of ensuring balanced organizational, political, and geographic representation across stakeholders. New Board Members shall be nominated by the member currently serving on the Board which represents a similar stakeholder, and shall be appointed upon a majority vote of the Board Members. Additional members may be added upon a vote of at least seventy percent (70%) of the then current Board or, so long as the additions do not exceed the maximum number of members permitted, or for committees, as the Board of Directors directs. Committee Members shall be appointed by the Board Members that represent their same type of entity or interest.

The Board of Directors and each committee shall select a chair and vice-chair; the chair shall manage the meetings and the board or committee's activities; the vice-chair shall take on the roles and responsibilities of the chair in the event the chair is absent or vacant. The chair shall also select a secretary, who is not



required to be a voting member of the board or committee. The secretary's role is to prepare any meeting minutes.

The Board or committee members shall remove any Board or committee member who has missed three consecutive meetings (regular and special meetings) or has failed to respond to five (5) consecutive requests for written consent. The removed Board or committee member may appoint his/her replacement; if the Board or committee member fails to appoint a new member within thirty-days, the Board of Directors may appoint a member to serve the removed member's remaining term.

**Setting and Conduct of Meetings.** An agenda for the meeting shall be provided to all Board or committee members at least five (5) business days prior to the meeting. Special meetings may be authorized by at least three (3) members of the Board of Directors; special meetings for each committee, may be authorized by at least two (2) members of the committee for which the special meeting is requested. The meetings shall be set by written notice of the time, date, location and subject matter of the special meeting to all committee members three business days in advance. Attendance at regular and special meetings may be in person or via any electronic means, which permits the attendees to hear all other participants and discussions and provide input and participate in discussions. Board of Directors members may designate proxies to attend and/or vote in their place. Any proxy designation must be approved in advance by the Board. Sufficient security and identification measures shall be taken to ensure that all attendees attending for discussion and voting purposes are authorized members with the right to speak and vote.

#### Voting

A quorum consisting of sixty percent (60%) of the authorized voting members of the board or any committee shall be required to conduct business. Except as may otherwise be provided in these procedures, a majority of those entitled to vote is required to enact or adopt measures on behalf of the NEER or the committee authorizing the vote.

Actions may also be taken via written consent if notice of the specific action is provided to all voting members, and at least eighty percent (80%) of all Board or committee members assent to the action. Assent may be given with the transmission of the notice to the Executive Director, with acceptance or rejection of the action specifically stated, signed and dated by the voting Board or committee member. Such acceptance or rejection shall contain a statement by which the signatory verifies his/her identity and authority to vote.

#### Conflict of Interest

Each Board and committee member shall promptly disclose to the Board or committee any circumstance that may constitute a conflict of interest in any matter coming before the Board or committee, including but not limited to circumstances in which the Board or committee member or its immediate family member has a personal or financial interest, or an organization with which he or she is affiliated does business or seeks to do business with the NEER (except as a program participant or certificate holder).

After disclosure of the potential conflict of interest and all material facts, and after any discussion with the disclosing Board or committee member, he or she shall leave the Board or committee meeting while the determination of a conflict of interest is discussed and voted upon. The remaining Board or committee members shall decide if a conflict of interest exists.

Whenever a Board or committee member has a conflict of interest, or the organization that he or she represents has a conflict of interest, in any matter coming before the Board of Directors or a committee, the Board or the committee shall ensure that:

- The interest of such Board or committee member is fully disclosed to the Board of Directors or committee.

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- No interested Board or committee member may vote or lobby on the matter or be counted in determining the existence of a quorum at the meeting of the Board of Directors at which such matter is voted upon, though a Board or committee member with an actual conflict may make a presentation on the subject, if permitted by the Board or committee.
- Any transaction in which a Board or committee member has a financial or personal interest, or the organization represented by that Board or committee member has an interest, shall be duly approved by members of the Board of Directors or committee not so interested or connected as being in the best interests of the organization.
- Any payments to the interested Board or committee member or organization shall be reasonable and shall not exceed fair market value.

A Board or committee member may avoid liability for taking, directly or indirectly, a business opportunity in which the NEER may be interested if the Board or committee member or organization which a Board or committee member represents brings a business opportunity first to the NEER's attention and the NEER disclaims its interest in the opportunity pursuant to the procedures for a conflicted interest transaction, above.

The minutes of meetings at which such votes are taken shall record such disclosure, abstention, and rationale for approval.

Each Board and committee member shall annually sign a statement which affirms such person:

1. Has received a copy of the conflicts of interest policy,
2. Has read and understands the policy,
3. Has agreed to comply with the policy, and
4. Understands the Association is charitable and in order to maintain its federal tax exemption it must engage primarily in activities which accomplish one or more of its tax-exempt purposes.

#### Appendix 5.1.1.1 Account Application

By this Agreement dated \_\_\_\_\_, 20\_\_\_\_, \_\_\_\_\_ (“NEER Account Holder”, or “NEER-AH”), \_\_\_\_\_ [entity] with its principal office in \_\_\_\_\_ agrees to comply with all of the terms and conditions of the NEER Principles and Operating Rules, Terms of Use, Privacy Policy and all associated documents, by the NEER Administrator (NEER-Admin) and NEER Governing Body (NEER-GB), which may be modified or restated. Without limiting the generality of the foregoing, the NEER-AH shall pay any and all fees established for it by the NEER-Admin and NEER-GB; provided, however, that the NEER-Admin shall provide notice to the NEER-AH at least 60 calendar days prior to the effectiveness of any change in the NEER’s fee structure that would result in the NEER-AH becoming liable for increased financial obligations related to the NEER. The NEER-AH may withdraw from the NEER prior to the effectiveness of such change without incurring such increased obligations. Instruments may be created for the NEER-AH prior to the date of its withdrawal from the NEER, but the NEER-AH shall not participate in the transfer of Instruments after the date of its withdrawal. The NEER-AH shall provide the NEER-Admin and all applicable Client Jurisdictions with any and all information required.

The NEER-AH acknowledges that it has received full and fair consideration for this agreement. Moreover, the NEER-AH agrees that the NEER, acting by and through the NEER-Admin, may terminate its involvement in the NEER if at any time if it fails to comply with the NEER Principles and Operating Rules, Terms of Use, Privacy Policy, or any associated documents.

The Account Types are: General, Asset-only and Restricted (Verifier or Jurisdiction). Review [Section 5](#) of the NEER Principles and Operating Rules to determine which Account Type is the most appropriate. Acceptance into the NEER is left to the sole discretion of the NEER-Admin. Acceptance in the NEER as an Energy Efficiency Provider (EE Provider) does not guarantee acceptance in a Specific Compliance / Certification Program (SCCP). NEER defers to the respective Client Jurisdiction for SCCP approval.

IN WITNESS WHEREOF, the undersigned have caused this agreement to be executed as of the date above.

NEER Account Holder

\_\_\_\_\_

NEER Account Type:

☐ General      ☐ Asset-only      ☐ Restricted, Verifier      ☐ Restricted, Jurisdiction

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

ACKNOWLEDGED:

National Energy Efficiency Registry

By: \_\_\_\_\_

NEER Administrator

## Steps to Complete Account Registration

The following information will guide you through the steps necessary to create an Account in the NEER. Please contact the NEER-Admin for assistance throughout the registration process.

### 1. Review of the NEER Operating Documents

- a. You should first review the following registry operating documents:
  - i. Terms of Use
  - ii. Principles and Operating Rules
  - iii. Privacy Policy

### 2. Online Registration

- a. Visit the online application and fill out all fields.
- b. Select your desired Account Type.
  - i. **General Account:** This type of Account can hold, import, export and retire Instruments. It can also transfer both outgoing and incoming Instruments. A General Account can also register and maintain Assets and create Instruments for its Assets. This Account may also be used for entities performing more than one role in the NEER. For example, EE Providers who will also function as Qualified Reporting Entities (QREs), or Jurisdictions who also wish to hold Instruments may open a General Account to access all functionalities for which they qualify.
  - ii. **Asset-only Account:** This type of Account can register Assets and have Instruments issued to it for its Assets. An Asset-only Account can hold, export, and retire Instruments. It can transfer only outgoing Instruments and cannot receive transfers or imports from other parties.
  - iii. **Verifier Account:** This type of Account allows QREs and Accredited Independent Verifiers (AIVs) to perform data entry and verification duties, respectively. Entities performing multiple roles should open a General Account.
  - iv. **Jurisdiction Account:** This type of Account is provided to Client Jurisdictions and their Specific Compliance/Certification Program Administrator(s) (SCCP Administrator) (if applicable) that utilize the NEER and/or have program and/or certification eligibilities noted on Certificates and Single Attribute Instruments. This Account will allow Client Jurisdictions to have access to documents or confidential business reports demonstrating compliance and eligibility. Reports are generated by the NEER-Admin with the permission of the NEER-AH.
- c. Attach all required and supplemental documents to support eligibility claims for the Account Type selected.

### 3. Acceptance of the Terms of Use

Your next step after clicking "Continue Registration" is to **read and agree** to the NEER Terms of Use:

- a. Review each section and indicate your acceptance of each section by checking "**I Agree**".
- b. Click the "**I Agree**" button to accept the Terms of Use.

### 4. Completion of Account Application

Upon accepting the Terms of Use, you will be directed to the online New Account Application Form.

- a. **Complete all required fields** which are noted by an asterisk (\*). This includes the payment of any Fees necessary to complete an Account application. Click "**Submit**".

- b. Upon completion, you will receive an email notification to activate the Account. This activation must occur before the NEER-Admin is notified of your pending Account.

#### 5. Account Review

The NEER-Admin will review the Account application.

- a. If the **Account application is complete and approved**, an email will be sent to the Account Holder email address provided in the application to notify the applicant of Account approval.
- b. **If materials are incomplete or additional information is required**, the NEER-Admin will notify the applicant of next steps.

Approved Accounts may begin using all functions of the system available for the specified Account Type.

#### 6. Create Sub-Account(s) & Additional Logins

All types of Account Holders must first create an Account for their organization with an assigned Authorized Account Representative (AAR) and Alternate-AAR.

- a. After Account approval, additional Sub-Accounts can be created, and logins may be added to your Account. These actions may be completed by the AAR or Alternate-AAR.
- b. If applicable, Account Holders should assign a QRE and/or AIV.

#### 7. Asset Registration Process (optional)

If you need to register Assets in the NEER, please see [Appendix 6.5.1](#).

#### Appendix 5.1.2.2 Retirement Designation List

When retiring Instruments, a NEER Account Holder (NEER-AH) or the NEER Administrator (NEER-Admin) must select the Instruments that are to be retired from its Active Sub-Account(s) and indicate the primary reason for the retirement. Each Instrument or batch of Instruments can only have a single reason for retirement in the NEER. NEER-AHs wishing to retire multiple Instruments for different reasons will have to retire those Instruments in batches corresponding to the primary retirement reason for each batch.

Retirement designation may be completed by the applicable NEER-AH who will select voluntary retirement or the Specific Compliance/Certification Program (SCCP) under which they are retiring the Instrument. After selecting the retirement type, the NEER-AH will complete the relevant series of designations:

#### Voluntary Retirement:

##### b. Select the Name of the Program:

- ☐ Company sustainability report
- ☐ Instrument retirement on behalf of another individual.  
Individual name: \_\_\_\_\_
- ☐ Voluntary withdrawal  
Reason: \_\_\_\_\_ (e.g., lack of demand/interest)
- ☐ Voluntary self-reporting
- ☐ Other \_\_\_\_\_

##### c. Select Client Jurisdiction Name:

- ☐ Company name
- ☐ Other \_\_\_\_\_

##### d. Please enter the Reporting Year: \_\_\_\_\_

#### SCCP Retirement:

***Certification Programs***

**b. Select the Name of the Program:**

- ☐ Green-e Energy  
☐ Other \_\_\_\_\_

**c. Select Client Jurisdiction Name:**

- ☐ Company name  
☐ Other \_\_\_\_\_

**d. Please enter the Reporting Year:** \_\_\_\_\_

***Compliance Programs***

**b. Select the Name of the Program:**

- ☐ State Energy Efficiency Resource Standard (EERS)  
☐ State Renewable Portfolio Standard (RPS)  
☐ Other \_\_\_\_\_

**c. Select Client Jurisdiction Name:**

- ☐ US EPA  
☐ State (*TBD*).  
☐ State (*TBD*).  
☐ Other \_\_\_\_\_

**d. Please enter the Compliance Year:** \_\_\_\_\_



**-OR-**

**NEER Administrator (NEER-Admin) Instrument Adjustment**

**a. Please explain the reason for adjustment:**

--

### Appendix 5.3.1 (a) AAR/Alternate AAR Application

The undersigned Account Holder (NEER-AH) hereby represents to the NEER Administrator (NEER-Admin) that:

1. The NEER-AH is the owner, per approval by the NEER-Admin of the NEER Attestations of Ownership and Exclusivity, of the Asset(s) contained in the designated Account(s) below.
2. The NEER-AH hereby designates the Authorized Account Representative (AAR) and Alternate-Authorized Account Representative (Alternate-AAR) named below as the AAR and Alternate-AAR within the NEER. The NEER-AH certifies that the AAR and Alternate-AAR have the necessary authority to carry out their duties and responsibilities under the NEER on their behalf and that the NEER-AH shall be bound to their representations, actions, inactions or submissions and by any decision or order issued to them by the NEER-Admin regarding any Asset or Instrument registered in the Account. The designation made hereunder expires on \_\_\_\_\_ (enter "N/A" if indefinite).

Account Holder Identification Number (NEER-AH ID Number): \_\_\_\_\_

3. The NEER-AH has not granted similar authority or permission to any other person for use in NEER.

#### NEER Account Holder

\_\_\_\_\_

Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Name:

Title:

#### Accepted and Agreed

##### Authorized Account Representative

\_\_\_\_\_

Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Name:

Title:

#### Accepted and Agreed

##### Authorized Account Representative

\_\_\_\_\_

Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Name:

Title:

**Appendix 5.3.1 (b) AAR/Alternate-AAR Application Modification**

The undersigned NEER Account Holder (NEER-AH) hereby attests to the NEER Administrator (NEER-Admin) that:

1. The NEER-AH is the owner, per approval by the NEER-Admin of the NEER Attestations of Ownership and Exclusivity, of the Asset(s) in its respective Account.

2. The NEER-AH requests to modify their original designated Authorized Account Representative (AAR) and/or Alternate-Authorized Account Representative (Alternate-AAR). The NEER-AH certifies that the new AAR and Alternate-AAR have all the necessary authority to carry out their duties and responsibilities under the NEER on their behalf and that the NEER-AH shall be bound to their representations, actions, inactions or submissions and by any decision or order issued to them by the NEER-Admin regarding any Asset or Instrument registered or held in the Account. The designation made hereunder begins on \_\_\_\_\_, and expires on \_\_\_\_\_ (enter "N/A" if indefinite).

Account Holder Identification Number (NEER-AH ID Number): \_\_\_\_\_

3. The NEER-AH has not granted similar authority or permission for the dates specified above to any other person for use in NEER.

**NEER Account Holder**

\_\_\_\_\_  
Address: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**Accepted and Agreed**

Original Authorized Account Representative:

Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Original Alternate-Authorized Account Representative:

Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**Accepted and Agreed**

**New Authorized Account Representative**

\_\_\_\_\_  
Address: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**Accepted and Agreed**

**New Alternate-Authorized Account Representative**

\_\_\_\_\_  
Address: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**Appendix 5.3.2 NEER User Guide**

*(TBD).*

### Appendix 5.3.5 Privacy Policy

The NEER Administrator (NEER-Admin) may collect and use personal and other information in a number of ways.

#### 1. Registration with the NEER-Admin

When you sign up for a particular service that may require registration, we will ask you to provide personal contact information such as your name, address, telephone number and email address. This may also include basic Account information for Fees or other purposes.

#### 2. Processing Information from Other Entities

The NEER-Admin may receive information from other entities such as our clients for the purpose of providing services to these entities. Some of this may be non-public personal information or business confidential information. Generally, we will process this data on their instructions and subject to confidentiality provisions.

#### 3. Information Automatically Logged

The NEER-Admin may use web server logs and similar tools to help diagnose problems with the server, to administer the website, and to enhance security or authenticate users. Server logs may be analyzed by a commercial tool to provide simple access demographics, including "New vs. Returning Visitors," "Top Visitors," "Top Geographic Regions," and other statistical reports.

#### 4. User Communications

If you send email or other communications to the NEER-Admin, we may retain and use those communications in order to process your inquiries, respond to your requests, and improve our services.

#### 5. Cookies

Our systems may use cookies to keep track of the state of your session and may also use cookies to deliver content specific to your interests. No personal information will be stored in cookies. If cookies are disabled, certain applications in the protected portion of our systems may not work properly.

#### 6. Other Purposes and Sharing

The NEER-Admin will not use or disclose business confidential or non-public information received from Account Holders except in connection with the provision and improvement of the NEER-Admin's services. Such uses or disclosures may include, for example, those that are usual, appropriate, or acceptable to carry out the NEER-Admin service for which the information was given or a transaction related thereto, to maintain Accounts, to provide confirmations and statements, to provide access to data services, and for record keeping purposes. In addition to the uses and disclosures set forth above, the NEER-Admin may use information you provide or it otherwise receives for:

- a. Auditing, research, and analysis in order to maintain, protect, and improve our services;
- b. Ensuring the technical functioning of our network;
- c. Satisfying any Applicable Law, regulation, legal process, or enforceable governmental request;
- d. Enforcing applicable Terms of Use, including investigation of potential violations thereof;
- e. Detecting, preventing, or otherwise addressing fraud, security or technical issues; protecting against harm to the rights, property, or safety of the NEER-Admin, its users or the public as required or permitted by law; or
- f. Sharing of aggregated and non-personal information.

We may share certain pieces of aggregated, non-personal information with third parties. This will not identify you individually or compromise any aspect of confidential information or transactions.

#### 7. International Users and Location of Data Processing

The NEER-Admin will process personal, business confidential, and non-public information on servers in the United States of America and in other countries where data protections may differ and in some cases be less adequate than those found in the United States of America. In some cases, we may process such information on a server outside your own country. Individuals outside the United States who submit personally identifiable information via NEER Site acknowledge and agree that the information submitted will be forwarded to the United States or other jurisdictions for processing in connection with the purposes for which it has been supplied.

#### 8. Links to Other Websites

Our websites may contain (resource) links to other websites. The NEER-Admin will not be held responsible for the privacy practices or the content of such websites. Users linking to other websites are encouraged to verify the privacy practices of the other websites.

### **Choice: Options Concerning Information We Collect**

The NEER-Admin will not collect or use information for purposes other than those described in this Privacy Policy without your consent. You will be given the option to agree with this Privacy Policy, but failure to agree with it may limit participation and access to NEER functionality.

#### Administrative and Marketing Communications: We Do Not Share with Third Parties for Their Marketing Purposes

The NEER-Admin will not to disclose business confidential or non-public information to third parties for their direct marketing purposes.

The NEER-Admin will not endorse or promote offers from third party advertisers and will not share your information with them.

The NEER-Admin may from time to time, in accordance with this Privacy Policy, use personal, business confidential, or non-public data to inform a NEER Account Holder (NEER-AH) about products and services that the NEER-Admin expects may be of interest to them. Individuals may object to any such data being used for such marketing purposes by contacting the NEER-Admin through the NEER Site or in writing at the appropriate mailing address.

NEER-AHs may consent to receiving administrative and related electronic communications related to our relationship.

### **Onward Transfer: Vendor and Supplier Information Sharing**

The NEER-Admin may disclose information to third parties such as vendors and suppliers who may act as our agent and with third parties on whose behalf we are collecting such information where such sharing is required by our business relationship. Such sharing may occur subject to appropriate confidentiality obligations. We will require our vendors and suppliers to agree to process such information based on our instructions and any other appropriate confidentiality and security measures.

### **Access: Your Right to Know and Correct the Information We Hold**

The NEER-Admin will strive to ensure that personal information is kept accurate and up to date. The NEER-Admin will kindly request its NEER-AHs to assist the NEER-Admin in complying with this obligation by informing the NEER-Admin of any changes to their personal information. NEER-AHs have the reasonable right to request details of the personal information that the NEER-Admin holds and to request the deletion or modification of any inaccurate personal information held by the NEER-Admin. Requests to access, modify, or delete such personal information should be sent in writing to the address indicated below.

### **Security: Our Efforts to Protect Information**

The NEER-Admin will take reasonable precautions to protect personal, confidential, and non-public information. The NEER-Admin will establish an information security program setting forth standards for maintaining administrative, technical and physical safeguards to govern information in our care, custody, or control.

The NEER-Admin will restrict access to business confidential, non-public, and personal information to those employees who need to know such information in order to provide the NEER-Admin's services or as otherwise appropriate and consistent with this Privacy Policy.

No data transmissions over the Internet can be guaranteed to be 100% secure. Consequently, we cannot ensure or warrant the security of any information you transmit to us and you do so at your own risk.

Despite our efforts, we cannot guarantee that information we process may not be accessed, disclosed, altered, or destroyed by breach of our security measures. In the event of a security incident, we will notify our NEER-AHs in accordance with Applicable Law.

### **Questions and Enforcement**

The NEER-Admin will regularly review its compliance with this Privacy Policy. Please feel free to direct any questions or concerns regarding this Privacy Policy or the NEER-Admin's treatment of personal, business confidential, or non-public information by contacting us through the NEER Site or in writing at the appropriate mailing address.

When we receive formal written complaints or disputes, the NEER-Admin will contact the complaining or disputing user regarding his or her concerns.

The NEER-Admin will cooperate with relevant data protection authorities in the investigation and resolution of complaints.

### **Changes to This Privacy Policy**

If in the future we change this Privacy Policy, we will post the new policy on the NEER Site. If this policy is somehow materially less restrictive or protective of your privacy than the current policy, we will not apply the less protective aspects of the revised policy to information you have previously provided to us without first obtaining your consent. If we have a way of contacting you electronically, we will do so in the way you have instructed us to obtain your consent. We reserve the right to change this Privacy Policy in the future. Your continued use of the NEER Site following a change in the Privacy Policy represents consent to the new policy to the fullest extent permitted by law.

We encourage you to periodically review this Privacy Policy.



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Contacting the NEER-Admin: (*TBD*).

Email: (*TBD*).

Address: (*TBD*).

Phone: (*TBD*).

**Appendix 5.4 NEER Fee Schedule**

*(TBD).*

#### Appendix 6.1.1.2 (a) Static Data QA/QC Module Guidelines

As required in [Section 6.1.1.2](#), Energy Efficiency Providers (EE Providers) that wish to register an EE Project as an Asset in the NEER must submit an online Asset registration package. The scope of the Asset registration package is dictated by the EE Provider's choices regarding Specific Compliance/Certification Program (SCCP) participation and quality assurance/quality control (QA/QC) rigor. EE Providers that are not intending to submit their EE Project for qualification in any SCCP have the option of choosing the online Asset registration package based on either NEER Basic or NEER Enhanced QA/QC protocols. Client Jurisdictions may recognize one of the NEER QA/QC protocols (for example, a Client Jurisdiction may choose NEER Enhanced as its standard for SCCP qualification) or may impose additional QA/QC protocol requirements which will be included in their SCCP Asset Application Addendum.

The NEER Administrator (NEER-Admin) is responsible for ensuring that the Asset registration package QA/QC settings match the EE Provider's submission and verifying with SCCP Jurisdictions and the EE Provider that reported QA/QC protocols are appropriately executed and documented. EE Providers complete online filings containing Static Data, which are submitted, archived and maintained within the NEER. The Static Data QA/QC will be fully disclosed on any Asset Output Log entry and/or Instruments associated with the Asset.

Each Static Data QA/QC protocol module is set up with an automated timeline in which tasks are completed and notifications provided to all participants. Participants have real-time access to view the status of the review process and who is responsible for the next action.

To promote consistency and transparency across Static Data QA/QC protocol modules, the NEER will publish a timeline of notifications for each Static Data QA/QC protocol module. To the maximum extent practicable, the NEER-Admin will encourage utilizing standard Static Data QA/QC tasks across multiple Static Data QA/QC protocol modules. Static Data QA/QC timeline notifications include, but are not limited to:

1. Asset Application Submitted
2. NEER Action Pending
3. Uploaded Asset Application Accepted by EE Provider
4. Attestation Disclosure Period, NEER Attestation of Exclusivity – Open
5. Attestation Disclosure Period, NEER Attestation of Ownership - Open
6. Attestation Disclosure Period, NEER Attestation of Exclusivity - Closed
7. Attestation Disclosure Period, NEER Attestation of Ownership - Closed
8. Attestation Disclosure Period, NEER Attestation of Exclusivity - Disputed
9. Attestation Disclosure Period, NEER Attestation of Ownership - Disputed
10. AIV- Open
11. AIV- Certified
12. AIV- Disputed
13. SCCP- Open
14. SCCP- Accepted
15. SCCP- Disputed

#### Asset Application Protocol: NEER Basic QA/QC

1. The Authorized Account Representative (AAR) or Alternate-AAR Submits an Online NEER Asset Identification Number (NEER Asset ID Number) Request

This is a simple form with all the necessary data elements required for the NEER Asset ID Number.

(The specific data elements will depend on the NEER Asset ID Number format; see [Appendix 8.1 NEER Serial Number Formats](#)).

2. The NEER-Admin Creates a “Pending Asset”

The Pending Asset within the NEER-AH’s Account establishes the electronic record for all application materials.

3. The AAR or Alternate-AAR Completes the Online Application

- a. Static Data Application
- b. NEER Attestation of Ownership
- c. NEER Attestation of Exclusivity

Automated data verification tests built into the NEER Software will ensure all data fields are correctly completed and that all electronic signatures are executed by individuals with the appropriate authorizations and credentials.

4. Attestation Disclosure

When an online application is complete and all verification tests are cleared, the NEER-Admin will post the NEER Attestation of Exclusivity and the NEER Attestation of Ownership on the NEER Site for a period of 45 calendar days.

5. Asset Profile Created and Approved

Based on the data fields in the online application, the NEER Software will populate the Asset profile, which is how the Asset will be represented in any reports and on any Instruments. The Asset QA/QC protocol type will be **ABC1256**. The AAR or Alternate-AAR will confirm that profile is accurate.

6. The NEER-Admin Uploads Registration

The NEER-Admin changes the status from “Asset Pending” to “Asset Active.” Registration is complete.

**Asset Application Protocol: NEER Enhanced QA/QC**

1. The AAR or Alternate-AAR Submits an Online NEER Asset ID Number Request

This is a simple form with all the necessary data elements required for the NEER Asset ID Number.

(The specific data elements will depend on the NEER Asset ID Number format; see [Appendix 8.1 NEER Serial Number Formats](#)).

2. The NEER-Admin Creates a “Pending Asset”

The Pending Asset with the EE Provider’s NEER Account establishes the electronic record for all application materials.

3. The AAR or Alternate-AAR Completes the Online Application

- a. Static Data Application
- b. NEER Attestation of Ownership
- c. NEER Attestation of Exclusivity

- d. AIV Verification Report, see step 4 below
- e. PDF of the EM&V Plan
- f. EM&V Data Field Summary

Data verification tests build into the NEER Software will ensure all data fields are correctly completed and that all electronic signatures are executed by individuals with the appropriate authorizations and credentials.

4. Review

When the online application is complete and all verification tests are cleared, the NEER-Admin will initiate two external reviews:

4a. Attestation Disclosure

The NEER-Admin will post the NEER Attestation of Exclusivity and the NEER Attestation of Ownership on the NEER Site for a period of 45 calendar days.

4b. The designated Accredited Independent Verifier (AIV) who satisfies the qualification requirements\* submits the verification report and completes certification.

E. AIV Verification Report

The NEER-Admin will open the AIV online report function and will notify the designated AIV that the system is ready for his/her action. The AIV will be asked to upload a PDF of his or her report and will be required to sign the NEER AIV Asset Certification via electronic signature.

5. Asset Profile Created and Approved

Based on the data fields in the online application, the NEER Software will populate the Asset profile, which is how the Asset will be represented in any reports and on any Instruments. The AAR or Alternate-AAR will confirm that the profile is accurate.

6. NEER-Admin Uploads Registration

The NEER-Admin changes the status from "Asset Pending" to "Asset Active." Registration is complete.

**\*AIV Qualification Requirements**

1. Only a NEER-Admin and/or Specific Compliance/Certification Program Administrator (SCCP Administrator) approved AIV may perform verification services.
2. AIVs must meet each of the following requirements in this section to be accredited.
  - a. AIVs must have the skills, experience, and resources (personnel and otherwise) to provide verification reports, including the following:
    - ii. Is a properly licensed professional engineer (PE) or licensed contractor in the jurisdiction in which the Asset(s) is located; and,
    - iii. Has represented in writing to the applicable administrator and EE Provider that they have the requisite qualifications and the capability to perform key verification and certification activities, such as development of a verification report; performance of site visits; review and recalculation of reported data; review of data management systems; review of quantification methods used in accordance with an approved EM&V plan; preparation of a verification statement, list of findings, and verification report; and internal review of the verification findings and report.

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- b. AIVs must demonstrate that they have in place adequate systems and protocols to identify, disclose and avoid potential conflicts of interest.
  - c. An AIV must maintain and ensure the maintenance of, for its employees and for any parties that it employs, professional liability insurance, as defined in 31 CFR 50.5(q), through an insurance provider that possesses a financial strength rating in the top four categories from either Standard & Poor's or Moody's, specifically, AAA, AA, A or BBB for Standard & Poor's, and Aaa, Aa, A, or Baa for Moody's. Any entity covered by this paragraph must disclose the level of professional liability insurance they possess when entering into contracts to provide verification services.
3. The NEER-Admin and/or SCCP Administrator may revoke the approval of an AIV at any time for cause, including for the reasons specified in this section.
- a. Failure to fully disclose any issues that may lead to a conflict of interest with respect to an Asset(s).
  - b. The AIV is no longer qualified to provide verification services.
  - c. Negligence in the conduct of verification activities, or neglect of responsibilities.
  - d. Intentional misrepresentation of data in a verification report.

#### Appendix 6.1.1.2 (b) NEER EM&V Minimum Requirements

This appendix specifies the minimum evaluation measurement and verification (EM&V) requirements that must be applied when developing an EM&V plan for NEER Enhanced. The EM&V Minimum Requirements may be revised in accordance to the procedures in the NEER Governance Charter ([Appendix 4.3](#)).

The EM&V Guidance ([Appendix 11](#)) includes supplemental technical information to support the development and implementation of EM&V plans consistent with the EM&V requirements below, and elaborates on applying these EM&V requirements when developing an EM&V plan for several different Energy Efficiency Project (EE Project) types. The EM&V Guidance is applicable to all EE Projects addressed in an EM&V plan.

##### **EM&V Plan Requirements:**

Any EM&V plan that is submitted as part of an Asset Application in support of the creation of an Instrument must meet the following requirements:

1. Provide a detailed description of the EE Project(s) that the EM&V plan addresses.
2. Specify the period of time for which the EM&V plan applies, which may not exceed the effective useful life (EUL) of the EE Project(s) addressed in the EM&V plan.
3. Specify that the Asset Output from EE Project(s) addressed in the EM&V plan will be quantified after the output has occurred, or at the same time that the Asset Output is occurring.
4. Specify how the Asset Output will be quantified and verified for each type of EE Project that the EM&V plan addresses. A single EM&V plan must separately address and specify these requirements for each distinct type of EE Project that comprises the Asset.
  - i. Specify that all Asset Output will be quantified pursuant to the EM&V plan as equal to the difference between the energy usage with the EE Project in place and the applied common practice baseline (CPB) for each EE Project, which must meet the requirements in *Section 5* hereof.
  - ii. Include EM&V method(s) used to quantify Asset Output that adhere to one or more best-practice protocols or guidelines, which must meet the requirements in *Sections 6 and 7* hereof.
  - iii. Specify how the interactive effects among EE Projects will be addressed. Such specifications must meet the requirements in *Section 8* hereof.
  - iv. Include a methodology for adjusting energy usage values to account for the effects of independent variables, which must meet the requirements in *Sections 6 and 8(ii)* hereof.
  - v. Indicate whether a pre-specified EUL or an annually verified EUL will be applied for each EE Project addressed in the EM&V plan, and include a demonstration of why that EUL approach is appropriate for the specific EE Project addressed in the EM&V plan. A pre-specified EUL must meet the requirements in *Section 9(i)*, and an annually verified EUL must meet the requirements in *Section (9)(ii)* hereof.
  - vi. Include the method for verifying the installation and operation of each EE Project addressed in the EM&V plan, which must meet the requirements in *Section 10* hereof.
  - vii. Include the method for assessment of the accuracy of quantified Asset Output from the EE Project(s) addressed in an EM&V plan, which must meet the requirements in *Sections 6 and 11* hereof.



- viii. Include the method for adjustment to the quantified Asset Output to account for transmission and distribution losses, as applicable, which must meet the requirements in *Section 12* hereof.
    - ix. Include any additional information necessary to demonstrate that Asset Output from an EE Project addressed in an EM&V plan will be appropriately quantified and verified, which must meet the requirements in *Section 13* hereof.
    - x. Any other requirements necessary to quantify and verify Asset Output, as specified by the NEER-Admin.
- 5. An EM&V plan must document the basis for selection of each CPB applied in the EM&V plan and must:
  - i. Demonstrate the appropriateness of that CPB for the specific EE Project to which it is applied, which must be based on each of the following:
    - a. Characteristics of the EE Project(s) (e.g., installation of high-efficiency equipment or facility operational change);
    - b. For high-efficiency equipment, the installation strategy (e.g., replacement upon equipment failure, early replacement, or new construction);
    - c. Local consumer and market characteristics (e.g., prevailing market shares of equipment of particular EE levels among different consumer segments);
    - d. Applicable building energy codes and standards (e.g., state-adopted building energy codes related to building envelope, equipment efficiency, or overall performance rating); and,
    - e. Applicable appliance and equipment standards (e.g., federal or state standards for minimum EE levels for particular lighting or HVAC technology).
  - ii. Specify the process by which the applied value of a CPB will be reviewed at least every 3 years and updated as necessary. An updated value of a CPB must be applied to all EE Projects addressed in an EM&V plan that are installed or that begin operating after such an update occurs. The review and update process specified in the EM&V plan must ensure that applied values of a CPB will reflect changes, if any, in the energy use that would occur, in the absence of the EE Project, at the more energy-efficient of:
    - a. The highest level of EE required by the applicable federal, state, or local building energy code or product or equipment standard, if any; or
    - b. The expected technology, operating conditions, or practices that would have existed at the time of implementation or the likely subsequent replacement within the timeframe of the EUL of the EE Project, in the absence of the EE Project.
- 6. An EM&V plan must document the basis for selection of the best-practice EM&V protocols or guidelines applied in the EM&V plan, specify how the best-practice EM&V protocols or guidelines will be applied, and demonstrate the appropriateness of those best-practice EM&V protocols or guidelines for the EE Projects to which they are applied. A protocol or guideline is considered to be “best practice” if it:
  - i. Is identified as a best-practice protocol or guideline in the EM&V Guidance ([Appendix 11](#)); or
  - ii. Has gone through a rigorous and credible development and vetting process that includes review by EM&V experts and other stakeholders representing multiple affected organizations

and interests, and has been approved by the NEER-Admin as meeting the requirements in *Section 6* hereof.

7. An EM&V plan must document the basis for selection of the EM&V method(s) identified in the EM&V plan, specify how the EM&V method(s) will be applied, and demonstrate the appropriateness of the EM&V method(s) for the EE Project(s) to which it is applied. Each EM&V method must be applied according to the following requirements:
  - i. Each EM&V method must fall within one of the following categories: Direct measurement and verification EM&V methods; deemed savings EM&V methods; or comparison group EM&V methods.
  - ii. If the EM&V method is the deemed savings EM&V method, the following requirements must be met:
    - a. Document why the use of the specific deemed savings energy savings value or formula is appropriate for the specific EE Project(s) addressed in the EM&V plan.
    - b. The deemed savings energy savings value or formula must be documented in a freely available database or spreadsheet, which may be known as a technical reference manual (TRM), that is accessible on a public Web site, specifies the conditions for which each deemed savings energy savings value or formula may be applied (e.g., climate zone, building type, and implementation strategy, such as retrofit, replacement on failure, or new construction), and specifies the source of each deemed savings value or formula.
    - c. A deemed savings energy savings value or formula must quantify Asset Output as the difference between the energy used by the EE Project and the CPB for each EE Project, as described above in *Section 5* hereof. A deemed savings energy savings value or formula for an EE Project must also account for the interactions between individual EE Projects that comprise the Asset.
    - d. Specify the process by which each deemed savings energy savings value or formula will be reviewed at least every 3 years in accordance with *Section (7)(ii)* hereof, and updated as necessary, to reflect applicable research studies and analysis. The EM&V plan must also specify the process by which an updated deemed savings energy savings value or formula will be applied to all EE Projects addressed in an EM&V plan that are installed or begin operating after such an update occurs.
8. An EM&V plan must describe how interactive effects and independent variables are addressed in the EM&V methods for quantification of Asset Output in the EM&V plan, in accordance with the following requirements:
  - i. An EM&V plan must at a minimum address the following three types of interactive effects:
    - a. Other-system effects;
    - b. Multi-measure effects; and,
    - c. EE program overlap.
  - ii. An EM&V plan must identify any independent variables that affect Asset Output, and specify how the quantified value of Asset Output will be adjusted to account for the effects of such independent variables. The EM&V plan must indicate that Asset Output will be quantified for the average conditions of the independent variables over the EUL of the EE Project in the EM&V plan.

9. An EM&V plan must indicate whether a pre-specified EUL or an annually verified EUL will be applied for each EE Project addressed in the EM&V plan, and include a demonstration of why that EUL approach is appropriate for the EE Project(s) to which it is applied. EULs for EE Project(s) must account for differences in EUL values among the EE Projects that comprise the Asset, as applicable. An EUL must meet the following requirements:
  - i. Pre-specified EUL. A pre-specified EUL must be based on the criteria in *Section (9)(i)(a)*; and only if the criteria in *Section (9)(i)(a)* are unavailable, then by the criteria in *Section (9)(i)(b)*; and only if the criteria in *Section (9)(i)(b)* are unavailable, then by the criteria in *Section (9)(i)(c)* hereof.
    - a. An EE Project persistence study conducted according to the requirements of a best practice protocol for determining EUL values, and with the 80 percent confidence limits for the EUL no more than +/-20 percent different from the EUL estimate.
    - b. A deemed EUL that is documented in a database or spreadsheet, which may be known as a TRM, and that meets the requirements for documentation of deemed savings values and formulas described in *Section (7)(ii)* hereof.
    - c. An independent third-party laboratory lifetime testing protocol.
      - i. An annually verified EUL. An annually verified EUL must verify on an annual basis that the EE Projects addressed in an EM&V plan, including EE Projects that comprise an Asset, are delivering Asset Output and meet the requirements in *Section 10* hereof.
10. An EM&V plan must document the best-practice approaches that will be used to verify Asset Output from EE Projects addressed in the EM&V plan, in accordance with the following requirements:
  - i. To verify that EE Projects are installed and operating, the following requirements must be met, as applicable:
    - a. For an Asset consisting of the installation of multiple EE Projects at different locations, the EM&V plan must specify the process that will be used to verify the quantity of each type of EE Project that is installed and operating during the period of time for which the EM&V plan applies.
    - b. For EE Projects intended to influence consumer behavior, the EM&V plan must specify the process that will be used to verify that the EE Project(s) continue to have the intended effect on consumer behavior during the period of time for which the EM&V plan applies.
    - c. For an EE Project that may be partially operational, the EM&V plan must specify the process that will be used to verify what portions of the EE Project are installed and operational during the period of time for which the EM&V plan applies.
  - ii. To verify the quantified value of Asset Output, each EM&V plan must specify the processes and approaches that will be applied for quality assurance and quality control (QA/QC) of all values, formulas, and calculations used to quantify Asset Output.
11. Each EM&V plan must specify how the accuracy of Asset Output will be assessed for the EE Projects addressed in the EM&V plan. This must include an assessment of how the types of measurement error that are inherent to EM&V will be controlled, as well as how random error will be quantified. The quantifiable statistical errors that must be considered include both sampling error and modeling or estimation error. For each reporting period, the total quantified Asset Output values must have a 90 percent confidence interval with end points that differ from the quantified value by no more than +/-10 percent of that value. This requirement for statistical accuracy applies to the combined effect of all

measurable sources of statistical uncertainty across the EE Projects addressed in an EM&V plan. It is not necessary to calculate an explicit 90 percent confidence interval for the total quantified Asset Output, as long as it can be shown using valid statistical methods that the confidence interval is not more than 10 percent from the estimate.

12. An EM&V plan may include a method for quantifying avoided electricity transmission and distribution losses for the EE Projects addressed in the EM&V plan, provided that requirements in *Section 12(i)* hereof, are met.<sup>7</sup>

- i. If avoided transmission and distribution electricity losses will be included in the quantification of eligible Asset Output from an EE Project, the applicable EM&V plan must specify the method used to determine the associated transmission and distribution loss factor, as well as the numerical value of such loss factor. Avoided transmission and distribution electricity losses are quantified by multiplying the MWh savings from EE Project(s) by the appropriate loss factor. The appropriate loss factor must be determined in accordance with *Sections 12(i)(a)* through *12(i)(b)* hereof, as applicable.
  - a. The appropriate loss factor is the annual average loss factor of the electric utility serving the physical address where the eligible resource is located. The loss factor is determined using the most recent publicly available data for the utility reported in Form 861 (EIA-861) to the U.S. Energy Information Agency using the following equation:

$$\text{T\&D utility loss factor} = \frac{\text{Total Electricity losses}}{\text{Total retail electricity sales} + \text{Total electricity losses}}$$

Where:

T&D utility loss factor = A factor derived using EIA's 861 Operational Dataset for an individual utility for a specific year.

Total electricity losses = A value found in EIA's 861 Operational Dataset "total energy losses" column of the disposition data for the individual utility. Losses are electricity not consumed by the utility customer load, such as electricity consumed directly by the individual utility (MWh).

Total retail electricity sales = A value derived from EIA's 861 Operational Dataset from the "retail sales" column of the disposition data for the individual utility (MWh).

- b. Where the data necessary for calculating a utility-specific average transmission and distribution loss factor(s) under subparagraph (a) above is unavailable, incomplete, or not reported in EIA-861, or where an eligible resource or program is implemented across multiple utility service territories, the appropriate loss factor is the average loss rate for all utilities in the state where the eligible resource is located. The loss factor is determined using the most recent publicly available data reported in EIA-861 and the following equation:

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<sup>7</sup> The method for quantifying avoided electricity transmission and distribution losses does not apply to natural gas EE Projects.

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$$\text{T\&D State loss factor} = \frac{\sum \text{Total Electricity losses}_{state}}{\sum \text{Total retail electricity sales}_{state} + \sum \text{Total electricity losses}_{state}}$$

Where:

T&D State loss factor = A factor derived using EIA's 861 Operational Dataset at the State level.

Total electricity losses<sub>state</sub> = A value derived from EIA's 861 Operational Dataset by summing the values from the "total energy losses" column of the disposition data for each utility in the State (MWh).

Total retail electricity sales<sub>state</sub> = A value derived from EIA's 861 Operational Dataset by summing the values of the "retail sales" column from the disposition data for each utility in the State (MWh).

Water EE Projects (TBD).

For reference, the International Performance Measurement and Verification Protocol (IPMVP) provides M&V guidance for both energy and water Asset Outputs.

## Appendix 6.2 Reasons for Asset Termination

In certain circumstances the NEER Administrator (NEER-Admin) may need to remove an Asset(s) and any associated output from the NEER. While an Energy Efficiency Provider (EE Provider) may remove its Asset(s) from the NEER at its own discretion, the NEER-Admin may only remove an Asset from the NEER for just cause (see below for examples).

Prior to terminating an Asset, the NEER-Admin must give the EE Provider 90 calendar days' notice of its intent to terminate. During this window, the EE Provider will have the opportunity to contest the Asset Termination using the NEER Dispute Resolution process (See [Section 11](#) for more information on the Dispute Resolution process). A second notice will be sent if no response is received within 45 days of the NEER-Admin's initial notice of intent to terminate.

The list below includes some of the reasons the NEER-Admin might decide to terminate an Asset.

### 1. Termination Required by Law

The NEER-Admin may terminate an Asset from the NEER if required to do so by any Applicable Law, or by any order or other decision of a court of law, arbitral panel or governmental agency. In this case, at least 90 calendar days' notice will be given to the EE Provider, unless a shorter notice period is required by the Applicable Law or the relevant order or decision.

### 2. Failure to Pay Fees

Failure to pay Fees associated with the NEER may result in Asset Termination.

### 3. Violation of the Terms of Use

If the EE Provider violates the Terms of Use agreement in relation to an Asset, the NEER-Admin has just cause to remove that Asset. Violations may include: intentional double counting, creation of fraudulent Assets, intentional submission of false Static or Dynamic Data, and engaging in bribery or misconduct of any kind with relation to the Asset in question.

Participants in the NEER, including but not limited to EE Providers, Instrument buyers or any entity that opted to receive notifications from the NEER, who notice a violation of the Terms of Use are encouraged to report such instances to the NEER-Admin. Only the NEER-Admin may remove an Asset from the NEER due to violations. If an Asset is no longer eligible to participate in a certain Specific Compliance/Certification Program (SCCP), the Client Jurisdiction may remove the Asset from its SCCP, but it does not have the authority to remove the Asset from the NEER, as the Asset may be eligible for another SCCP. Client Jurisdictions that wish to remove an Asset from its SCCP must do so through private communication outside of the NEER.

### Appendix 6.3 Change of Ownership Application

Please fill out the relevant sections below to indicate how your Asset should be updated.

Asset Name:	
NEER Asset Identification Number (NEER Asset ID Number):	
Single Attribute Instrument Identification Number(s) (SCCP ID Number[s]):	
State in which Asset is Located:	

#### Change in Asset Ownership

Original Owner Name:	
Original Owner Account Holder Identification Number (NEER-AH ID Number):	
New Owner Name:	
New Owner NEER-AH ID Number:	
Ownership Change:	<input type="checkbox"/> Transfer of Asset Only <input type="checkbox"/> Transfer of Instruments Created Based on Asset's Output Only <input type="checkbox"/> Transfer of Asset and Instruments Created Based on Asset's Output
Date of Ownership Transfer:	
Original Owner Signature:	
New Owner Signature	

I attest that the statements above are true and accurate.

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Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



#### Appendix 6.4 Guidance for Aggregation of EE Projects

The NEER will allow any kind of aggregation of Energy Efficiency Project(s) (EE Project), so long as such aggregation is properly disclosed during Asset registration, including full disclosure of evaluation measurement and verification (EM&V) and quality assurance/quality control (QA/QC) protocols. However, if the EE Provider is seeking Single Attribute Instruments, they should adhere to the most stringent requirements of Specific Compliance/Certification Program (SCCP) from which they are seeking Instruments.

Each Asset registered in the NEER will have a detailed description of the EE Project including:

1. Location and specifications of the building(s), facility(ies), or installation where EE measures were implemented or will be implemented;
2. Owner and operator of the building(s), facility(ies) or installations where EE measures are implemented or will be implemented;
3. The parties implementing the EE Project;
4. EE measures implemented (or to be implemented); and,
5. Specifications of equipment and materials installed, or to be installed, as part of the EE Project and project plans and technical schematics as applicable.

For Assets with distributed locations, such as EE Projects at multiple residential, commercial, or industrial buildings, the application must include the description of the geographic boundaries of the area where the distributed measures will be installed and must provide a description of the data archives that the EE Provider will maintain to assure that the Accredited Independent Verifier (AIV) and NEER Administrator (NEER-Admin) will have the ability to access the aggregated information about the location of measures that constitute an Asset.

The NEER will facilitate the transfer of information about Asset aggregation from EE Providers to any Client Jurisdiction that wishes to receive such information. The NEER will not disclose business confidential information, if any, without the express consent of the EE Provider or as otherwise required to participate in a certain Specific Compliance/Certification Program (SCCP). Any disputes between an EE Provider and a SCCP must be resolved between those two parties. If a dispute arises concerning the NEER-Admin, a NEER Account Holder (NEER-AH) may report such dispute by following the Dispute Resolution Guidelines in [Section 11](#).

### Appendix 6.5.1 Asset Application

Below is the application to register an Asset in the NEER. The EE Project(s), program(s) or measure(s) that comprise an Asset must be registered by an Energy Efficiency Provider (EE Provider) with a General or Asset-only Account. This application must be submitted as part of the Asset Application package, which also includes, at minimum, the NEER Attestation of Exclusivity and the NEER Attestation of Ownership. Additional documents that may be submitted include an Accredited Independent Verifier (AIV) report, evaluation measurement and verification (EM&V) plan and Specific Compliance/Certification Program (SCCP) Asset Application Addendum(s).

1. All information submitted on, or attached to, the application is considered to be a public record, except for any materials requested to remain business confidential.
2. Applicants are responsible for promptly notifying the NEER Administrator (NEER-Admin) of any future changes pertaining to the information contained within this application.
3. Please keep a copy of the application for your records.
4. Regarding any questions, contact (*TBD NEER Employee*) via email at [xxxx@neer.com](mailto:xxxx@neer.com) or directly at (xxx-xxx-xxxx).

#### Part I: Type of Application

<p><b>Check one:</b></p> <p><input type="checkbox"/> <b>New Application</b> (Complete entire application)</p> <p><input type="checkbox"/> <b>Amendment to Application</b></p>	<p><b>If an Amendment</b>, provide NEER Asset Identification Number (NEER Asset ID Number):</p>
---	---

#### Part II: Information

<p><b>1. Asset</b></p> <p>Asset Name: _____</p> <p>Location of Asset: _____ City/Town _____</p> <p>State: _____ Zip Code: _____</p> <p>County: _____</p> <p>*Project located in _____ utility service area in _____ (state)</p> <p>*Aggregation of projects all located in _____ utility service area in _____ (state)</p> <p>*Aggregation of projects located in multiple utility service areas within _____ (state)</p> <p>Description of Asset: (2000-character limit) _____</p> <p><small>* When applicable.</small></p>
<p><b>2. Account Holder Information</b></p> <p>Name _____</p>

NEER Account Holder Identification Number (NEER-AH ID Number): _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ ext.: _____
*Email: _____

<b>3. Authorized Account Representative Information</b>
Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ ext.: _____
*Email: _____
<b>NOTE:</b> By providing an <b>email address</b> above you are agreeing to receive official correspondence from the NEER-Admin regarding the subject application. Please notify the NEER-Admin if your email address changes.

<b>4. Alternate-Authorized Account Representative Information</b>
Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ ext.: _____
*Email: _____

<b>5. Expected Asset Output:</b>
a. Avoided Electric Energy (MWh)_____
b. Avoided Electric Capacity (MW)_____
c. Avoided Non-Electric Energy (MBTU)_____
d. Avoided Water Consumption (Gallons)_____
<b>6. Static Data Module Code Selected:</b> _____
<b>7. Dynamic Data Module Code Selected:</b> _____
<b>8. Project Completion Date:</b> _____ <b>or</b>
<b>Operation Date:</b> _____

9. <b>Project Type:</b> _____
10. <b>Technology Type:</b> _____
11. <b>EM&amp;V Plan:</b> _____
12. <b>Reporting Period:</b> _____
13. <b>Verifier Information:</b>  Reporting Entity: _____  Reporting Entity ID Number: _____  Accredited Independent Verifier (AIV): _____  AIV ID Number: _____  SCCP Admin(s): _____
14. Specific Compliance/Certification Program Eligibility (list all programs you are seeking acceptance):  SCCP #: _____

Part III: Account Holder Certification of Authorized Account Representative and Alternate-Account Representative

"I, as the Account Holder and owner of this Asset, and under the pains and penalties of perjury, hereby certify that the representatives named in Part II, No. 3 and 4 are authorized to act on behalf of the Account Holder and to execute the attached application for Asset registration."	
_____ Signature of Account Holder	_____ Date
_____ Print Name of Account Holder	_____ Title of Signatory

Part IV: Attachments:

Required
1. Attach a copy of the NEER Attestation of Exclusivity
2. Attach a copy of the NEER Attestation of Ownership
3. Attach a copy of the NEER AAR and Alternate-AAR Application
Optional

4. Attach a copy of the EM&V plan
5. Attach a copy of the EM&V Data Field Summary
6. Attach a copy of the AIV Verification Report
7. Attach a copy of SCCP Asset Application Addendum(s)

Part VI: Account Holder Certification

The NEER-AH must sign this certification. An application shall be considered incomplete without signatures.

I am authorized to make this submission as the entity with sole ownership interest with respect to the Attributes of the aforementioned Asset. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information. I am aware that the submission of this application authorizes the NEER-Admin to physically inspect the EE Project(s) (EE measure[s], program[s])<sup>8</sup> that comprise the Asset, as deemed necessary.

\_\_\_\_\_  
Signature of Account Holder

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name of Account Holder

\_\_\_\_\_  
Title of Signatory

<sup>8</sup> EE measure: is a single technology, energy-use practice or behavior that, once installed or operational, reduces energy usage at a particular end-use, facility, premises, or piece of equipment located behind a retail utility meter at a customer site.

EE project and program: consists of a combination of multiple measures, technologies, or energy-use practices in a single such end-use, facility, or premises, whereas an EE program is an organized activity sponsored and funded by a particular entity to promote the adoption of one or more EE projects or EE measures across multiple end-uses and facilities.

**Appendix 6.5.1.2 (a) NEER Attestation of Exclusivity**

I, \_\_\_\_\_ (Name and Title), authorized signatory of the  
\_\_\_\_\_ (Organization Name) with the NEER Account Holder  
Identification Number (NEER-AH ID Number) \_\_\_\_\_, the undersigned,  
hereby with full, personal and legal responsibility under penalty of perjury of law, warrant and attest that:

I, the undersigned, have full legal rights, interest, control and authority to all Attributes associated with the  
following Asset:

Asset Name: \_\_\_\_\_

NEER Asset Identification Number (Asset ID Number): \_\_\_\_\_

Asset Location (State): \_\_\_\_\_

I, the undersigned, principal party involved in the registration of this Asset, and seeking NEER Certificates  
and, if applicable, Single Attribute Instruments, attest that there are no additional owners, besides said  
organization, of this Asset's Attributes. If multiple parties have shared interest in this Asset, I certify all  
parties have signed and agreed that I am the sole owner of the Attributes associated with this Asset and  
that the Attributes for this Asset are not registered in any other registry.

I, the undersigned, understand, and I am fully aware that this Asset registration may be subject to  
attestation disclosure, and all information I provide to NEER will be accessible by the NEER Administrator  
(NEER-Admin).

I, the undersigned, attest that 100% of the energy savings, from said Asset, is registered and tracked  
within NEER. If said Asset was registered in another tracking system at one point, the NEER-Admin  
should be notified of this during the registration process and the NEER-AH must provide documentation  
to prove the Asset has been removed from the previous tracking system.

Electronically transmitted documents are deemed as legally binding as delivered originals.

I, \_\_\_\_\_ (Name), hereby swear under penalty of perjury, that the  
information provided herein is accurate and true as of this date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

For and on behalf of \_\_\_\_\_ (NEER Account Holder [NEER-AH]).

Signature: \_\_\_\_\_

Name / Title: \_\_\_\_\_

Company: \_\_\_\_\_

#### Appendix 6.5.1.2 (b) Attestation Disclosure Process

##### 1. Posting Attestation Disclosures on the NEER Site

The NEER Administrator (NEER-Admin) will maintain an Attestation Disclosure page in the Public Reports section of its website. When an online application is complete and all verification tests are cleared, the NEER-Admin will post the attestations on the NEER Site for a period of 45 calendar days. Asset registration documents requiring disclosure include:

- a. NEER Attestation of Exclusivity
- b. NEER Attestation of Ownership

Any NEER Account Holder's (NEER-AH) Authorized Account Representative (AAR) or Alternate-AAR can request an email notification for all, or a designated subset of, documents posted for Attestation Disclosure. For example, a Client Jurisdiction may request an email notification for NEER Attestation of Ownership or NEER Attestation of Exclusivity postings for Energy Efficiency Projects (EE Project) located in their region.

##### 2. Responding to Attestation Disclosures

Individuals with questions or concerns regarding a document posted for Attestation Disclosure may file an online Petition for Inquiry.

The Petition for Inquiry will include (but is not limited to) the following fields:

- a. Identification of petitioner, and
- b. Reason for the petition:
  - i. A request for additional information or clarification to assure there is no double counting of EE Projects, which must be accompanied by a specific request which shows where the data provided is insufficient or ambiguous.
  - ii. A challenge to the NEER Attestation of Exclusivity, which must be accompanied by evidence of non-exclusivity.
  - iii. A challenge to the NEER Attestation of Ownership, which must be accompanied by evidence of a counter-ownership claim.

The NEER-Admin will initiate facilitation of a dialogue among the Energy Efficiency Provider (EE Provider), the Petitioner and appropriate Client Jurisdiction(s) within 15 calendar days with the goal of a mutually agreeable resolution within 60 calendar days. Failure to achieve a resolution within the specified time frame will result in the challenge being referred to the formal Dispute Resolution process (see [Section 11](#) of the NEER Principles and Operating Rules).

**Appendix 6.5.1.3 NEER Attestation of Ownership**

I, \_\_\_\_\_ (Name and Title) authorized signatory of  
\_\_\_\_\_ (Energy Efficiency [EE] Provider Name), a  
\_\_\_\_\_ State (corporation, limited partnership, limited liability company,  
etc.), herein referred to as the EE Provider, do hereby depose and say under oath that the following  
statements are true, to the best of my information, knowledge and belief:

1. I am an authorized representative of the EE Provider.
2. The EE Provider owns all Attributes for an Asset, identified as:  
\_\_\_\_\_  
(Asset Name).  
\_\_\_\_\_  
(NEER Asset Identification Number)
3. No other entity or individual owns any part of the Attributes associated with the Asset named in #2.
4. The EE Provider will self-report or hire a Qualified Reporting Entity (QRE), with or without the review of an Accredited Independent Verifier (AIV), for all Asset Output resulting from the Asset. The level of stringency associated with such Asset Output reporting shall be determined by the most stringent Specific Compliance/Certification Program (SCCP) (if any) for which the Asset seeks Single Attribute Instruments. Such reporting shall be done under the penalties of perjury.
5. The Asset produces approximately \_\_\_\_\_ (circle one: MWh, MW, MBTU, Gallons) of Asset Output per month. I have attached a description of how the Asset Output is calculated, Attachment A.
6. I will promptly submit a revised Attestation if the information contained once this Attestation becomes outdated.
7. Attachment B is an accurate and complete description of the project.

Witness my hand under the penalties of perjury this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

(EE Provider Name)

By: \_\_\_\_\_

Title: \_\_\_\_\_

(Address, telephone number and email address of Account Holder.)

**Appendix 6.5.1.3 NEER Attestation of Ownership, Attachment A**

Estimate Asset Output based on the description and M&V methodology proposed in this application:

Witness my hand under the penalties of perjury this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

(EE Provider Name)



National Energy Efficiency Registry Principles & Operating Rules

By: \_\_\_\_\_

Title: \_\_\_\_\_

(Address, telephone number and email address of Account Holder.)

**Appendix 6.5.1.3 NEER Attestation of Ownership, Attachment B**

Project Description:

Witness my hand under the penalties of perjury this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

(EE Provider Name)

By: \_\_\_\_\_

Title: \_\_\_\_\_

(Address, telephone number and email address of Account Holder.)

#### Appendix 6.5.1.5 SCCP Asset Application Addendum

This template can be customized by a Specific Compliance/Certification Program Administrator (SCCP Administrator) to create a digital form for Energy Efficiency Providers (EE Providers) to submit to their SCCP Administrator as part of the Asset Application package. A SCCP Administrator may choose to add or delete fields to match their unique SCCP requirements. The SCCP Administrator should add explicit direction on which individuals and entities may apply for participation in the SCCP. If the SCCP requires multiple parties to review any part of the application, the SCCP should clearly state those requirements in its application. Additionally, the SCCP Administrator should provide their policies in the application where possible, or incorporate existing relevant policies and include links to that information. Once the SCCP Administrator has customized the SCCP Asset Application Addendum, they should notify the NEER Administrator (NEER-Admin), who will then make the form digitally available to any EE Providers seeking to apply for the SCCP.

Please note: This application form should be completed by EE Providers seeking Single Attribute Instruments for a SCCP. All information submitted on, or attached to, the application is considered to be a public record. Any material in this application an EE Provider requests to remain business confidential, or not publicly available, is subject to approval by the SCCP Administrator. EE Providers should consult the SCCP Administrator for parameters regarding what information is accepted as business confidential.

##### Directions:

- This digital form should be submitted by EE Providers to their SCCP Administrator as part of the Asset Application package.
- Applicants are responsible for notifying the SCCP Administrator within 30 calendar days of any changes pertaining to the information contained within this application. SCCP Administrators are responsible for notifying the NEER-Admin within 30 calendar days of any changes to what is required in their SCCP Asset Application Addendum.
- **Contact** (*TBD NEER Employee*) with any questions at [xxxx@neer.com](mailto:xxxx@neer.com) or xxx-xxx-xxxx. For **questions regarding SCCP requirements, contact** (*TBD SCCP Representative*) at [yyy@sccp.com](mailto:yyy@sccp.com) or yyy-yyy-yyyy.

##### Part I: Submission Type

<p><b>Check one:</b></p> <p><input type="checkbox"/> <b>New</b></p> <p><input type="checkbox"/> <b>Amendment</b></p>	<p><b>If an amendment</b>, provide NEER Asset Identification Number (NEER Asset ID Number) and SCCP ID Number:</p> <p>NEER Asset ID Number: _____</p> <p>SCCP ID Number: _____</p>
--	--

##### Part II: SCCP Information

Please note that the SCCP Administrator will customize the below forms before they are released in the NEER for completion by EE Providers. Therefore, EE Providers will only need to fill out sections with blank lines.

1. **SCCP Name** *Example:* Massachusetts Energy Efficiency Resource Standard
2. **SCCP Administrator Name** *Example:* "Jane Doe, Secretary of the Executive Office of Energy and Environmental Affairs" (*this would be an individual or specific department designated under the SCCP to run the program*)
3. **Client Jurisdiction** *Example:* Massachusetts Executive Office of Energy and Environmental Affairs
4. **SCCP Description**
5. **Is the Asset physically located within the Client Jurisdiction?** (Yes/No): \_\_\_\_\_  
If "No," please list physical location of the Asset: \_\_\_\_\_
6. **Vintage parameter** (monthly, annual, or other): \_\_\_\_\_
7. **SCCP Retirement Deadlines:** \_\_\_\_\_
8. **SCCP Rules on Asset Output Historical Data:** \_\_\_\_\_

9. **SCCP Policies and Rules**

Here the SCCP may add its rules and policies.

<SCCP Conflict of Interest Policy: ... >

\_\_\_: I Accept

<SCCP Know Your Customer (KYC) procedures: ...>

Required Info (1): \_\_\_\_\_

Required Info (2): \_\_\_\_\_

Required Info (3): \_\_\_\_\_

<SCCP Business Confidential Information Policy: ...>

\_\_\_: I Accept

10. **SCCP Eligibility Requirements**

Here the SCCP may indicate its eligibility and aggregation requirements.

<SCCP Project Eligibility Requirements>

\_\_\_: I Accept

<SCCP EE Project Aggregation Policy>

\_\_: I Accept

### 11. Quality Assurance/Quality Control (QA/QC) Protocols

Here the SCCP may indicate the QA/QC protocols required for Static and Dynamic Data. An example of this may be ABC123 or XYZ123. See figures 9-16 in the NEER Principles and Operating Rules for more information.

<SCCP Static Data QA/QC protocol module code>

\_\_: I Accept

<SCCP Dynamic Data QA/QC protocol module code>

\_\_: I Accept

### 12. Additional Parties

Here the SCCP may indicate any additional parties required. An example of this may be a Qualified Reporting Entity (QRE) or Accredited Independent Verifier (AIV).

#### Qualified Reporting Entity:

Name: \_\_\_\_\_

NEER-AH ID Number: \_\_\_\_\_

Signature: \_\_\_\_\_

#### Accredited Independent Verifier:

Name: \_\_\_\_\_

NEER-AH ID Number: \_\_\_\_\_

Accreditation ID Number: \_\_\_\_\_

Signature: \_\_\_\_\_

### 13. Additional Data Fields Required

Here the SCCP may indicate any additional data fields required. An example of this may be avoided carbon. If an SCCP wishes to require an additional data field, it should submit the methodology for such calculation to the NEER-Admin.

Additional data field 1: \_\_\_\_\_

Additional data field 2: \_\_\_\_\_

Additional data field 3: \_\_\_\_\_

Part III: Supplemental Materials

This application should be submitted as part of the Asset Output Application package. Additionally, the SCCP may incorporate any of the following information within the SCCP Asset Application Addendum. These may include, but are not limited to:

1. SCCP conflict of interest policy
2. SCCP KYC procedures
3. SCCP confidentiality rules
4. SCCP project eligibility rules
5. SCCP aggregation rules
6. SCCP QA/QC protocol requirements
7. Calculations for additional data fields, if applicable
8. Any additional information required by SCCP(s)

Part IV: Certification

I am authorized to make this submission as the entity with sole ownership interest with respect to the Attributes of the Asset described here and in the associated Asset Application ([Appendix 6.5.1](#)). I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information.

\_\_\_\_\_  
Online Signature of Account Holder

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name of Account Holder

\_\_\_\_\_  
Title of Signatory

## Appendix 7.1 NEER Asset Output Log Data Fields

Account Holder Name	
Account Holder Identification Number (NEER-AH ID Number)	
NEER Asset Identification Number (NEER Asset ID Number)	
Specific Compliance/Certification Program Identification Number(s) (SCCP ID number [s]), if Applicable	
Activity Description	Identifying Data Submitted, Instruments Created, etc.
Static Data QA/QC Protocol Module Code	
Dynamic Data QA/QC Protocol Module Code	
Reporting Period Start	
Reporting Period End	
Unit of Asset Output reported to the NEER during the current month	
Status	
Note	Displays serial numbers or data upload name files

### Appendix 7.2 (a) Asset Output Dynamic Data Application

Below is the application to submit Asset Output Dynamic Data in the NEER. Asset Output Dynamic Data is reported as the total energy avoided for each Vintage period and follows the quality assurance/quality control (QA/QC) protocol module selected in the Asset registration process. Assets must be registered by an Energy Efficiency Provider (EE Provider) with a General or Asset-only Account.

- **For NEER Basic:** Submission of this application alone is sufficient.
- **For NEER Enhanced:** an Accredited Independent Verifier (AIV) must subsequently submit a Measurement and Verification (M&V) report, M&V report data fields and an AIV report.
- **Specific Compliance/Certification Program (SCCP):** If applicable, additional requirements set forth by a SCCP may also be submitted with this document. Consult SCCP requirements to determine the necessary supplementary documents.

Please note: This application should be completed by the EE Provider. All information submitted on, or attached to, the application is considered to be a public record. Any material in this application an EE Provider requests to remain business confidential, or not publicly available, is subject to approval by the NEER Administrator (NEER-Admin) or Specific Compliance/Certification Program Administrator (SCCP Administrator), as applicable. EE Providers requesting to keep material confidential should discuss the matter with the appropriate Administrator.

#### Directions:

1. Applicants are responsible for notifying the NEER-Admin within 30 calendar days of any changes to the information provided within this application.
2. If you have any **questions, contact** (*TBD NEER Employee*) via email at [xxxx@neer.com](mailto:xxxx@neer.com) or directly at (xxx-xxx-xxxx).

#### Part I: Application Type

<p><b>Check one:</b></p> <p><input type="checkbox"/> <b>New Application</b> (Complete entire application)</p> <p><input type="checkbox"/> <b>Amendment to Application</b> (Complete entire application)</p>	<p><b>NEER Account Holder (NEER-AH) ID Number:</b></p> <p>_____</p> <p><b>NEER Asset ID Number:</b></p> <p>_____</p> <p><b>Installation Period:</b></p> <p>_____ to _____</p> <p><b>Asset Type:</b></p> <p>_____</p> <p><b>Is this Asset composed of an aggregation of EE Projects?</b></p> <p>(Yes/No): _____</p>
---	--

#### Part II: Asset Output Information

1. **Range of Vintage Periods Covered in this Application:** \_\_\_\_\_ to \_\_\_\_\_
2. **Asset Output** (for each Vintage period addressed in #1): \_\_\_\_\_ MWh  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ MBTU  
\_\_\_\_\_ Gallons

Vintage Period		Asset Output for Vintage Period			
Month	Year	MWh	MW	MBTU	Gal.

*(For an Amendment to Application, this table will be auto-populated from previous applications)*

### 3. Dynamic Data QA/QC Protocol Module

Dynamic Data module code selected during Asset registration (This code will be auto-populated from the Static Data Application associated with the Asset ID Number): \_\_\_\_\_

#### 4. SCCP Eligibility

Please list the name(s) of any SCCP(s) for which this Asset is seeking Single Attribute Instruments for the Vintage period specified in #1.

SCCP Name: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_ SCCP ID Number: \_\_\_\_\_

SCCP Name: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_ SCCP ID Number: \_\_\_\_\_

SCCP Name: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_ SCCP ID Number: \_\_\_\_\_

SCCP Name: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_ SCCP ID Number: \_\_\_\_\_

SCCP Name: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_ SCCP ID Number: \_\_\_\_\_



Part III: Attachments:

Part IV: NEER-AH Certification

The NEER-AH must sign this certification. An application shall be considered incomplete without such signature.

I am authorized to make this submission as the entity with sole ownership interest with respect to the Attributes of the aforementioned Asset. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information.

\_\_\_\_\_  
Signature of Account Holder

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name of Account Holder

\_\_\_\_\_  
Title of Signatory

**Attachment 1: NEER Enhanced Requirements**

**Measurement and Verification (M&V) Report**

The following components are required for the NEER Enhanced M&V report:

1. Documentation of completed evaluation, measurement and verification (EM&V) in accordance with the EM&V plan submitted during the Asset Application process. This should include quantification of Asset Output to be credited and verification of such output.
2. Documentation that the Asset Output has not been submitted for crediting under any other registry or tracking system.
3. Documentation that the Asset Output resulted from the specified EE Project in the location listed in the Asset Application.

EE Providers choosing to follow the NEER Basic protocol are not required to have an AIV submit an M&V report on their behalf. EE Providers that are complying with an SCCP should follow the SCCP's specific guidance on M&V Report requirements.

### **AIV Report**

The NEER Enhanced protocol requires an AIV report, submitted after AIV review and approval of the application.

The AIV report should include:

1. An attestation from the AIV that no conflict of interest had been identified that would impact the AIV's ability to provide a fair and impartial verification.
2. The following findings of the AIV based on assessment of all relevant requirements information and data, including:
  - a. An assessment of any material misstatements or data discrepancies;
  - b. Attestation that the data submitted to quantify Asset Output during the specified Vintage period is adequate and valid;
  - c. Verification of the eligibility of the Asset to be issued NEER Certificates;
  - d. Confirmation that the Asset exists and has been/will be producing Asset Output in the manner specified;
  - e. Assessment that the Asset Output is within a technically feasible range;
  - f. A finding that the EM&V plan meets the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)); and,
  - g. And any other information the verifier finds, in its professional opinion, is necessary to assess the accuracy of the Asset subject to the AIV report.

The following statement, signed by the AIV:

"I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my personal knowledge and/or inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment."

## Appendix 7.2 (b) Dynamic Data QA/QC Module Guidelines

As required in [Section 7.1](#), the NEER Account Holder (NEER-AH) must submit an online Asset Output Application to report their Asset Output. The scope of the Asset Output Application is determined by the Energy Efficiency Provider's (EE Provider) choices regarding Specific Compliance/Certification Program (SCCP) participation and quality assurance/quality control (QA/QC) rigor, which are made during the Asset registration process. EE Providers not participating in any SCCP will choose either NEER Basic or NEER Enhanced QA/QC protocols. Depending on the SCCP Jurisdiction's requirements for an Asset participating in its SCCP, the EE Provider may be able to select one of the NEER QA/QC protocols (such as NEER Enhanced, if it was adopted by the Client Jurisdiction as its standard for SCCP qualification), or they may be required to file an SCCP Asset Application Addendum which specifies any additional QA/QC requirements.

The NEER Administrator (NEER-Admin) has the responsibility to assure that each Asset's QA/QC settings match the EE Provider's submission, and will verify with SCCP Jurisdictions and the NEER-AH that the reported QA/QC protocols are appropriately executed and documented. The Dynamic Data QA/QC will be fully disclosed on any Asset Output Log entry and/or Instrument(s) associated with the Asset. To fulfill this responsibility, which provides all NEER-AHs confidence in data quality, the NEER-Admin must receive specific direction from EE Providers through online filings. All information and direction submitted will be archived and maintained within the NEER software.

Each Dynamic Data QA/QC protocol includes an automated timeline in which tasks are completed and notifications are provided to all participants. Participants have the ability to view the status of the review process and who is responsible for the next action.

To promote consistency and transparency across Dynamic Data QA/QC protocol modules, the NEER will publish a timeline of notifications for each Dynamic Data QA/QC module. To the maximum extent practicable, the NEER-Admin will encourage utilizing standard Dynamic Data QA/QC tasks across multiple Dynamic Data QA/QC protocols. Dynamic Data QA/QC timeline notifications include, but are not limited to:

1. Data Submitted (when new or adjusted data is submitted to the NEER-Admin)
2. NEER Action Pending
3. Auto Validation- Pending
4. Auto Validation- Passed
5. Auto Validation- Disputed
6. Uploaded Data Accepted by EE Provider
7. AIV- Open
8. AIV- Certified
9. AIV- Disputed
10. SCCP- Open
11. SCCP- Accepted
12. SCCP- Disputed

### Asset Output Application Protocol: NEER Basic QA/QC

1. EE Provider's Authorized Account Representative (AAR) or Alternate-AAR completes the online Asset Output Application
  - W. Dynamic Data Application
2. NEER-AH submits Dynamic Data to the NEER-Admin

Dynamic Data submission files will include tables in a format defined by the NEER-Admin for upload into the Asset Output Log. Data elements will include, for each Vintage period, the total quantity of Asset Output and, where appropriate, Dynamic Data, such as emission rates.

3. NEER-Admin Uploads Data Directly into the Asset Output Log

The date that the Dynamic Data submission files are uploaded into the NEER Asset will be included in the Output Log. In order to ensure the integrity of the data in the NEER Asset Output Log, any formatting inconsistencies will result in the rejection of the data submission. Once the data is successfully uploaded, its status will be "Upload Complete."

4. AAR or Alternate-AAR approves Dynamic Data as Uploaded

5. NEER-Admin Changes Status of the Dynamic Data to "Final – Self Reported"

Under the draft model NEER Principles and Operating Rules, data submitted to the NEER under the NEER Basic QA/QC protocol cannot be used as the basis for creating Instruments.

**Asset Output Application Protocol: NEER Enhanced QA/QC**

1. AAR or Alternate-AAR completes the online Asset Output Application

W. Dynamic Data Application

X. Measurement & Verification (M&V) Report\* (see M&V requirements below)

Y. M&V Report Data Fields

\*The full M&V Report will be a PDF.

2. NEER-AH Submits Dynamic Data to the NEER-Admin

Dynamic Data submission files will include tables in a format defined by the NEER-Admin for upload into the Asset Output Log. Data elements will include, for each Vintage period, the total quantity of Asset Output and, where appropriate, Dynamic Data, such as emission rates.

3. NEER-Admin Uploads Data Directly into the Asset Output Log

The date that the Dynamic Data submission files are uploaded into the NEER Asset will be included in the Output Log. In order to ensure the integrity of the data in the NEER Asset Output Log, any formatting inconsistencies will result in the rejection of the data submission. Once the data is successfully uploaded its status will be "AIV Certification Pending."

4. Accredited Independent Verifier (AIV) Report and Certification

Z. AIV Verification Report

QA/QC protocols that require the verification and certification of Dynamic Data must be completed by an AIV that satisfies the AIV Qualification Requirements (See [Appendix 6.1.1.2 \[a\]](#)).

The NEER-Admin will notify the AIV designated by the NEER-AH that AIV online report function is ready for his/her action. The AIV will be asked to upload a PDF of his or her AIV report and will be required to sign the NEER AIV Asset Output Certification via electronic signature. Once the AIV has completed the electronic signature on the NEER AIV Asset Output Certification, the status will be automatically changed to "Asset Output Pending NEER-AH Approval."

5. AAR or Alternate-AAR Review

The NEER-AH may undertake a final review of the uploaded Asset Output, AIV Report and Certification and will give approval to the NEER-Admin to use the data as the basis for creation of Instruments. Once the NEER-AH completes the review and enters his/her approval, the status will automatically change to “Asset Output Final.”

6. Creation of Instruments

Based on the Asset Output final data, the NEER-Admin will create Instruments at the end of each Vintage period. Instruments are only created when data has been Deemed Verified on or after the last calendar day of the Vintage period.

**M&V Report Requirements**

Any M&V report that is submitted in support of the creation of an Instrument must meet the following requirements:

1. For the first M&V report submitted for the Asset, documentation that the Asset was installed or implemented consistent with the description in the approved eligibility application required in [Section 5](#) of the NEER Principles and Operating Rules; and
2. For each M&V report submitted:
  - a. Identification of the time period covered by the M&V report;
  - b. A description of how relevant quantification methods, protocols, guidelines, and guidance specified in the evaluation measurement and verification (EM&V) plan were applied during the reporting period to generate the quantified MWh of Asset Output;
  - c. Documentation (including data) of the Asset Output from any activity, project, measure, resource, or program addressed in the EM&V report, quantified and verified in MWh for the period covered by the M&V report, in accordance with its EM&V plan, and based on ex-post savings;
  - d. Documentation of any change in the output capability of the eligible Asset during the period covered by the M&V report and the date on which the change occurred. Documentation must include certification that the eligible Asset continued to meet all eligibility requirements during the reporting period covered by the M&V report, or disclosure of any material changes to the eligible Asset from the description of the eligible Asset in the approved eligibility application. Disclosure of material changes must include any change in the energy output capability of the qualifying eligible Asset (including the date of the change); and,
  - e. Documentation of any change in ownership interest of the qualifying eligible Asset (including the date of the change).

You must ensure that any M&V report submitted pursuant to this subpart includes the following certification:

“I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.”

## Appendix 8.1 NEER Serial Number Formats

Identifier	Display Order	Data Type	Length	Range of Codes	Notes
State	1	Alpha-Numeric	2		Abbreviation for state in which Asset Output occurred
Vintage Creation Date	2	Alpha-Numeric	4	2010	Year in which a certificate issuance occurred. Creation will occur at the end of each Vintage period.
Asset ID Number	3	Numeric	6	1-999999	Unique ID assigned to each type of eligible Asset
Unique Serial Number	4	Numeric	5	Numeric value assigned to each Instrument created 1-99,999 unique per originating EE Project per vintage.	

#### Appendix 8.1.4 Instrument Data Fields

Fields include those listed below and additional fields may be added in the future.

##### NEER Certificate Data Fields

Data Field	Notes
<b>Part 1: Asset Information</b>	
NEER Asset Identification Number (NEER-Asset ID Number)	Unique ID assigned to each Asset record in the NEER.
Instrument Serial Number	
Asset Name	Name of Asset.
Asset Owner	
Status	Active, Retired or Expired (dependent on SCCP).
Unit of Asset Output	MWh, MW, MBTU, etc.
Location, State	
Instrument Creation Date	Date Instruments were created in NEER.
<b>Part 2: Commence Operation Information</b>	
Installation Commenced	Month and year.
Installation Concluded	Month and year.
Installation Phases (optional)	<p>Phase 1: month and year installation commenced and month and year installation concluded.</p> <p>Phase 2: month and year installation commenced and month and year installation concluded.</p> <p>Phase 3: month and year installation commenced and month and year installation concluded.</p>
<b>Part 3: Asset Output Vintage</b>	

Vintage	Month and year Asset Output Vintage represented by this Instrument.
<b>Part 4: NEER Quality Assurance / Quality Control Protocol Code</b>	
Static Data QA/QC Protocol Code	Enhanced, plus code (e.g., ADE123).
Dynamic Data QA/QC Protocol Code	Enhanced, plus code (e.g., ADE123).
<b>Part 5: Measurement and Verification Type</b>	
IPMVP Option A	International Performance Measurement and Verification Protocol (IPMVP).
IPMVP Option B	
IPMVP Option C	
IPMVP Option D	
<b>Part 6: Accredited Independent Verifier and Qualified Reporting Entity Disclosure</b>	
Not Applicable	
Asset Registration AIV	Name, Accreditation Body and Accreditation ID Number.
Asset Output Reporting AIV	Name, Accreditation Body and Accreditation ID Number.
Asset Output Reporting QRE	Name.
<b>Part 7: Eligibility for Specific Compliance/Certification Programs (SCCPs)</b>	
Not Applicable	
SCCP Identification Number (SCCP ID Number), #1	Client Jurisdiction and SCCP ID Number listed here.
If applicable, SCCP #1 Single Attribute Instrument Serial Number ( <i>N/A if no instrument issued</i> )	



SCCP ID Number, #2	Client Jurisdiction and SCCP ID Number listed here.
If applicable, SCCP #2 Single Attribute Instrument Serial Number ( <i>N/A if no instrument issued</i> )	
<b>Part 8: Project Type</b>	
Comprehensive portfolio of rate payer funded programs implemented by an Investor Owned Utility (IOU) under the oversight of a Public Utility Commission (PUC).	
Comprehensive portfolio of rate payer programs implemented by a publicly owned utility or Coop.	
Energy Service Company (ESCO) contract to a public agency or entity required to follow public procurement procedures.	
ESCO contract to a private entity not required to follow public procurement procedures.	
PACE	
Private investments	
Other	
Description of project.	
<b>Part 9: Technology Type</b>	
Boiler Plant Improvements	
Chiller Plant Improvements	
Building Automation Systems/Energy Management Control Systems (EMCS)	

## National Energy Efficiency Registry Principles & Operating Rules

Heating, Ventilating, and Air Conditioning
Lighting Improvements
Building Envelope Modifications
Chilled Water, Hot Water, and Steam Distribution Systems
Electric Motors and Drives
Refrigeration
Distributed Generation
Renewable Energy Systems
Energy/Utility Distribution Systems
Water and Sewer Conservation Systems
Electrical Peak Shaving/Load Shifting
Energy Cost Reduction Through Rate Adjustments
Energy Related Process Improvements
Commissioning
Advanced Metering Systems
Appliance/Plug load reductions
Future/Other ECMs

### Single Attribute Instrument Data Fields

Data Field	Notes
<b>Part A: Asset Information</b>	

## National Energy Efficiency Registry Principles & Operating Rules

NEER Asset Identification Number (NEER Asset ID Number)	Unique ID assigned to each Asset record in the NEER.
Specific Compliance/Certification Program Identification Number (SCCP ID Number)	A number issued by the SCCP Administrator that identifies the Asset in the program.
Single Attribute Instrument Serial Number	
Asset Name	Name of Asset.
Asset Owner	
Status	Active, Retired or Expired (dependent on SCCP).
Unit of Asset Output	MWh, MW, MBTU, etc.
Location, State	
Instrument Creation Date	Date Instruments were created in NEER.
<b>Part B: NEER Certificate Information</b>	
Associated NEER Certificate Serial Number	
<b>Part C: SCCP Data Field Requirements</b>	
This section is left for specific data fields required by the SCCP Administrator. See examples below.	
EE Project Emissions	Carbon dioxide, Carbon monoxide, Mercury, Particulate matter, Nitrogen oxides, etc.
Avoided Emissions	Avoided emissions are based on estimates and calculations of how avoided electric generation impacted emissions by electric generating units (EGU). The NEER will only include such avoided emission information upon request by a Client Jurisdiction and only if such Client Jurisdiction provides the calculation methodology.

## **Appendix 8.6 Compatible Registries**

*(TBD)*.

#### **Appendix 8.6.1 Specific Tracking System Requirements**

*(TBD).*

## **Appendix 10 Data Security Measures**

*(TBD).*

## Appendix 11 EM&V Guidance

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## Acronyms and Abbreviations

ACEEE – American Council for an Energy-Efficient Economy

AMI – advanced metering infrastructure

ANSI – American National Standards Institute

ASHRAE – American Society of Heating, Refrigerating, and Air-Conditioning Engineers

## National Energy Efficiency Registry Principles & Operating Rules

C&S – building energy code and equipment energy standard

CHP – combined heat and power

CPB – Common Practice Baseline

CVR – conservation voltage reduction

DOE – (United States) Department of Energy

EE – energy efficiency

EERS – energy efficiency resource standard

EIA – (United States) Energy Information Administration

ESCo – energy services company

EM&V – Evaluation, Measurement, and Verification

EPA – (United States) Environmental Protection Agency

EUL – effective useful life

FCM – forward capacity market

FEMP – (U.S. Department of Energy) Federal Energy Management Program

HVAC – heating, ventilating, and air-conditioning

IOU – investor-owned utilities

IPMVP – International Performance Measurement and Verification Protocol

ISO – independent system operator

ISO-NE – ISO New England

LBNL - Lawrence Berkeley National Laboratory

LEAS - lifetime equivalent annual savings

LED – light emitting diode

M&V – measurement and verification MW – megawatt

MWh – megawatt-hour

NEEP – Northeast Energy Efficiency Partnerships

NGO – non-governmental organization

NREL – National Renewable Energy Laboratory

O&M – operations and maintenance

PUC – public utilities commission

RCT – randomized control trial



RTF – (Northwest Power and Conservation Council Northwest) Regional Technical Forum

RE – renewable energy

RUL – remaining useful life

SEE Action – State and Local Energy Efficiency Action Network

T&D – transmission and distribution (system)

TRM – technical reference manual

UMP – (United States Department of Energy) Uniform Methods Project

## 1 Introduction

This EM&V Guidance for Energy Efficiency (Guidance), while focused on energy (electric and non-electric) Asset Outputs, it also generally applies to avoided water consumption. For reference, the IPMVP provides M&V guidance for both energy and water Asset Outputs. This Guidance may be revised in accordance to the procedures in the NEER Governance Charter ([Appendix 4.3](#)).

This Guidance is a supplemental technical resource to help Client Jurisdictions, Energy Efficiency Providers (EE Provider), and the entities that EE Providers hire— e.g., Accredited Independent Verifiers (AIV)—successfully implement evaluation measurement and verification (EM&V) that is consistent with the provisions in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). The scope of this Guidance applies to Energy Efficiency Projects (EE Project) registered as an Asset by an EE Provider in support of the creation of an Instrument. The Guidance is intended to support all types of EE Providers, including investor-owned utilities (IOU), public utilities, private companies such as an energy service company (ESCO), and the owners and operators of large commercial or industrial facilities. It applies to EE Projects installed or operating across all customer sectors.

This Guidance takes the EM&V provisions in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)) and provides technical details to help EE Providers understand and implement them.

Contents of this Guidance include *Key Definitions*, *Discussion*, and *Applicable Guidance* that describes how to implement key EM&V provisions addressed in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). The *Applicable Guidance* sections below aim to add clarity and technical details to demonstrate how EE Providers can implement the EM&V approach outlined in NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). This Guidance reflects a set of well-known and standardized EM&V best-practices and protocols that are already in wide use.

In providing this Guidance, the NEER recognizes that the best-practice approaches, protocols, and procedures that are now used by states, EE Providers, and others – and upon which this document is based – will evolve and improve over time as new technologies and methods emerge and the EE marketplace changes. To ensure that this Guidance and related EM&V information continues to reflect best practices over time, the NEER may periodically provide updates and/or additional supporting materials.

### 1.1 What is EM&V?

EM&V is a set of procedures, methods, and analytic approaches used to quantify the Asset Output from Energy Efficiency Projects (EE Projects). For Energy Efficiency, EM&V compares measured energy usage with an EE Project in place with the best estimate of the likely energy use in the absence of the EE Project (the “counterfactual” scenario or baseline). Asset Output is quantified relative to this counterfactual baseline.

Other key components of a robust EM&V approach for an EE Project(s) include but are not limited to determining the effective useful life (EUL) of the EE Project, selecting an appropriate EM&V method, verifying that the EE Project is installed and operating properly, applying an appropriate best-practice protocol or guideline, and accounting for interactive effects and independent variables that affect Asset Output. *Applicable Guidance* on how to apply each of these components in the context of Instrument issuance is provided below.

### 1.2 Experience with EM&V for EE

From the time that EE emerged as an important energy strategy in the 1970s, efforts to quantify and verify the resulting Asset Output have been critical to its success, credibility, and expansion. The earliest such efforts involved quantifying Asset Output from individual EE Projects. This was followed by an evolution and improvement in practices for a broad range of EE programs and strategies across sectors. Today, these EM&V practices are used by utilities, ESCos, and other EE Providers. They are backed up by well-established protocols and guidelines, and overseen by Public Utility Commissions (PUCs) and other governing agencies. The EM&V industry now comprises many large firms and hundreds of individual practitioners, and is supported by training and education programs, as well as published reports and publicly available data and technical resources.

The EM&V approaches and best practices in wide use today and are primarily derived from PUC requirements for customer-funded EE programs typically implemented by utilities, as well as the DOE's Federal Energy Management Program's (FEMP) requirements for ESCo projects. These oversight mechanisms have generated the majority of the methods, protocols, and definitions for quantifying Asset Output that the EE industry uses today. However, the level of oversight and review, and the specifics of how EM&V is applied necessarily varies in response to the policy context and specific objectives for which EE is deployed.

With this evolution in EM&V, many states and utilities now routinely rely on EE as a resource in meeting energy (MWh) and capacity (MW) goals and to ensure reliable electricity service. All 50 states currently administer some type of EE program, while 25 states have mandated statewide EE standards or goals such as energy efficiency resource standards (EERS) and mandates for "all cost-effective EE." Many jurisdictions also support private sector EE Projects (such as those implemented via ESCo energy performance contracts), as well as building energy codes and equipment standards for equipment not covered by federal efficiency requirements. In addition, two Independent System Operators (ISOs)—ISO New England (ISO-NE) and PJM Interconnection—have established forward capacity markets (FCMs) that compensate suppliers of EE and other demand-side resources on par with electric generation to meet regional capacity needs and ensure system reliability. The oversight and quality control of EE in each of these contexts differs somewhat, but in each case relies on EM&V procedures that are robust, transparent, and well documented.

Despite improvements in EM&V over time, challenges remain. One such challenge is that quantification practices are more robust for some EE program and policy types than for others. Additionally, there is limited experience applying EM&V in the context emission trading programs, where each Asset Output may become a commodity that can be bought and sold. As a result, the NEER includes a number of safeguards and quality assurance and quality control (QA/QC) protocols that are intended to ensure the accuracy of quantified Asset Output.

### 1.3 Contents of this EM&V Guidance

The remainder of this document provides supplemental technical information that describes how to successfully implement the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). It is organized into the following topics:

- [Section 2.1 Baselines for Calculating Asset Output](#)

- [Section 2.2 Asset Output Quantification Methods](#), which addresses deemed savings, direct M&V, and comparison group methods in detail
- [Section 2.3 Effective Useful Life](#)
- [Section 2.4 Verification of EE Project Installation](#)
- [Section 2.5 Additional Aspects of Asset Output Quantification](#), which covers independent variables affecting energy consumption and savings, interactive effects, transmission and distribution (T&D) savings and adders, accuracy of Asset Output, and avoiding double counting
- [Section 2.6 Timeframes for Reporting Asset Output and Instrument Issuance](#)
- [Section 2.7 Best Practice EM&V Protocols and Guidelines](#)

This document only addresses the EM&V topics for which the NEER has determined that additional technical information may be useful for Instrument issuance purposes.

In addition, this Guidance includes a **glossary of key terms** used in this document. It is intended to be consistent with best-practice protocols and guidelines already in wide use.

## 2 EM&V Guidance

The *Discussion*, *Applicable Guidance*, and *Key Terms* provided in each of the sections below are intended to help Client Jurisdictions and EE Providers, and the entities that EE Providers hire (e.g., AIVs) successfully implement EM&V requirements in the NEER. As previously described, the information provided here leverages and is generally consistent with EM&V best practices, protocols, and procedures already being used by the majority of states across the country.

### Key Terms for EE Activities

**EE measure:** is a single technology, energy-use practice or behavior that, once installed or operational, reduces electricity usage at a particular end-use, facility, premises, or piece of equipment located behind a retail utility meter at a customer site.

**EE Project:** consists of a combination of multiple measures, technologies, or energy-use practices in a single such end-use, facility, or premises, whereas an EE program is an organized activity sponsored and funded by a particular entity to promote the adoption of one or more EE Projects or EE measures across multiple end-uses and facilities.

**EE program:** organized activities sponsored and funded by a particular entity to promote the adoption of one or more EE Projects that, once installed or operational, results in a reduction in the energy use required to provide the same or greater level of service in multiple end-uses, facilities, or premises.

For the EM&V topics addressed below, the following information is provided:

- **Discussion** that includes a high-level overview and offers relevant background information.
- **Applicable Guidance** that is intended to help Client Jurisdictions, EE Providers, and the entities they hire implement the EM&V provisions.

- **Key Terms** that are included in text boxes in each section and are also compiled in the *Glossary of Terms* at the end of this document.

The remainder of this *Guidance* describes how the following seven topics may be applied consistent with the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)):

1. Baselines for Calculating Asset Output
2. Asset Output Quantification Methods
3. Effective Useful Life
4. Verification of EE Project Installation
5. Additional Aspects of Asset Output Quantification
6. Timeframes for Reporting Asset Output and Instrument Issuance
7. Best Practice EM&V Protocols and Guidelines

## 2.1 Baselines for Calculating Asset Output

### *Discussion*

Asset Output from an EE Project is commonly defined as the difference between energy consumption with the EE Project in place and the consumption that would have occurred in the absence of that activity during the same time period. What would have happened without the EE Project is the baseline case (or “counterfactual”), and energy consumption under the baseline case is called baseline consumption.

Specifying the baseline case for a particular EE Project is a key challenge with EM&V. If the condition prior to the installation of an EE Project were always the baseline, this determination would be relatively straightforward. However, most EE Projects take place in a context of ongoing changes in markets, technology, policy, and operations. Specifying a baseline requires consideration of this context. For example, when the EE Project is an improvement to the efficiency of new construction or a new equipment installation that would occur regardless of the efficiency level, the baseline can be defined in terms of the new installations or actions that would otherwise occur. When an EE Project occurs in the context of other EE Projects, such as new equipment installation in a market affected by building codes or equipment standards, the other EE Projects must be considered in determining the baseline condition for the first EE Project.

### Key Terms for Asset Output

**Baseline consumption:** the energy consumption that would have occurred at the baseline efficiency level and operating conditions.

**Common Practice Baseline (CPB):** the level of energy performance that would occur, in the absence of the EE Project, at the more energy efficient of either:  
(1) the highest level of EE required by the applicable federal, state, or local building energy code or product or equipment standard, if any (i.e., the code or standard that corresponds to the lowest energy consumption of the buildings or equipment it applies to, all else equal); or (2) the expected technology, operating conditions, or practices that would have existed at the time of implementation or the likely subsequent replacement within the EUL of the EE Project, in the absence of the EE Project.

**Gross savings:** difference between energy consumption of the affected equipment or facility with versus without the EE Project in place, without consideration of program influence or attribution. Gross savings is calculated relative to a specified baseline determined without regard to program influence.

**Net savings:** the difference between energy consumption with the program or intervention in place and that which would have occurred absent the program or intervention, accounting for program influence and attribution.

**Operating conditions:** the conditions in which the EE Project or affected structure or equipment is used or operated.

### Common Practice Baseline

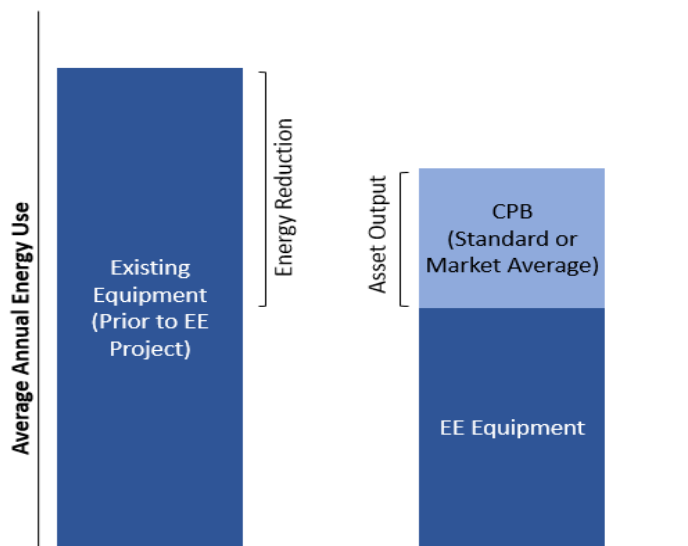
The NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)) requires that Asset Output is quantified based on a comparison between energy consumption with an EE Project in place and the consumption that would otherwise result at the time of the EE Project implementation. This counterfactual scenario is referred to as the Common Practice Baseline (CPB) and is defined as:

*Common Practice Baseline means the level of energy performance that would occur, in the absence of the EE Project, at the more energy efficient of either (1) the highest level of energy efficiency required by the applicable federal, state, or local building energy code or product or equipment standard, if any (i.e., the code or standard that corresponds to the lowest energy consumption of the buildings or equipment it applies to, all else equal); or (2) the expected technology, operating conditions, or practices that would have existed at the time of implementation or the likely subsequent replacement within the EUL of the EE Project, in the absence of the EE Project.*

The CPB is one aspect of Instrument quantification designed to ensure that Asset Output is quantified—and Instruments are issued—only for efficiency levels that are (a) beyond what would be typical or expected for the installation and market and (b) beyond existing requirements. While Asset Output baselines for existing utility EE programs and private-sector EE may differ somewhat by Client Jurisdiction and EE Provider, the CPB definition is consistent with well-established approaches and practices currently in use around the country.

By relying on Asset Outputs quantified against an applied CPB, the NEER is establishing a uniform basis for quantifying Asset Output from all eligible EE Projects, including those implemented in the private market (as illustrated in Figure 2-1 for a case in which equipment is replaced on failure). A CPB therefore provides a common, actionable baseline for both public and private investments while still ensuring that Asset Outputs are additional and incremental to what would otherwise occur for similar applications in that market. Since the efficiency level of the market advances naturally, the CPB value for new EE Projects must be continually re-evaluated to ensure that new EE Projects continue to be additional to what is happening naturally in the market.

*Figure 2-1. Illustrative Comparison of Total Energy Reduction vs. Asset Output Using CPB for Equipment Replaced on Failure*



The *Applicable Guidance* below specifies the CPB that will ordinarily apply for the following different types of EE Projects and contexts. While this list does not address each possible type of EE Projects, it covers the significant majority that EE Providers are currently implementing. It is not intended to exclude any EE Projects.

- **Higher efficiency replacement:** Replacement of existing facility equipment or structural component (such as windows) with high efficiency new equipment or component
- **Higher efficiency equipment in new installations:** Installation of high efficiency equipment or structural components in new construction, major renovation, or other first installation of the equipment type that triggers a building energy code
- **Add-on efficiency:** Equipment or structural changes that can be added to facilities or equipment, such as insulation or controls
- **Operational or maintenance improvement:** Operational improvements such as adjusting set points or run times, or maintenance actions that improve efficiency, without installation of new equipment affected by these improvements or actions<sup>9</sup>

<sup>9</sup> O&M activity may include installation of control devices, and may also be implemented in conjunction with installation of new equipment affected by the O&M activity, but the installation of new affected equipment is not included as part of the O&M activity itself. Combined implementation of O&M activity together with new affected equipment would require attention to interactive effects.

- **Combination EE measures installed as part of the same EE Project:**<sup>10</sup> Combinations of multiple EE measures (e.g., equipment replacement, operational improvement, add-on, new controls, building shell) that jointly affect the same systems
- **New construction or renovation at higher efficiency:** New construction or major renovation that triggers code, to produce a higher efficiency performance building than required by code
- **New state-wide equipment standards:** New state-wide efficiency standards for manufacture or sale of particular types of energy-using equipment, setting a new mandatory minimum efficiency standard for a particular equipment type
- **Whole-building EE improvement:** Comprehensive assessment and improvements to building shell, equipment, or operations
- **Mass market information and encouragement:** Provision of information and encouragement to adopt a wide variety of physical, operational, and behavioral efficiency improvements to large groups of customers
- **Building operations and maintenance training:** Provision of training to building operators on particular types of building operations and maintenance improvements

For higher efficiency replacement or add-on efficiency, the CPB specification also depends on the context of the replacement. Contexts in which higher efficiency replacement activities may be implemented include:

- **Replace on failure:** Replace equipment at the end of its useful life with high-efficiency equipment
- **Early replacement:** Replace equipment prior to the end of its useful life with high-efficiency equipment.

Contexts in which add-on EE Projects may be implemented include:

- Added to existing facility without concurrent equipment replacement (not triggering code)
- Added to existing facility with concurrent equipment replacement (not triggering code)
- Included with new construction/major renovation (triggering code)

#### *Types of Baseline Efficiency and Operating Conditions*

The CPB for a particular EE Project will be equivalent to one of the types of baseline efficiency listed in the following text box:

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<sup>10</sup> When EE Projects are installed in combination, it may be simpler to calculate Asset Output for the combination rather than attempting to calculate Asset Output for each EE Project individually and then adjust for interactive effects.



### Key Terms for Baseline Efficiency and Specifying a CPB

- **Existing efficiency:** the efficiency level of equipment, systems, or construction in place prior to the EE Project.
- **Standards efficiency:** the efficiency level for the most stringent<sup>1</sup> applicable federal, state, or local equipment standard or building code (if any) in place prior to the EE Project.
- **Market efficiency:** the average<sup>2</sup> efficiency level of applicable new equipment in the market in place prior to the EE Project.
- **Market/standards efficiency:** the higher of standard efficiency and market efficiency in place prior to the EE Project. Use market efficiency if there is no applicable federal, state, or local code or standard or if market efficiency is above standard efficiency.
- **Dual baseline:** a baseline corresponding to existing efficiency up to the remaining useful life (RUL) of the existing equipment, systems, or construction, and market/standards efficiency for the remainder of the effective useful life (EUL) of the EE Project.<sup>3</sup>
- **Underlying equipment efficiency:** for an add-on or operational EE Project, the efficiency of the equipment that the add-on or operational change applies to (without the add-on or operational change). In cases of early replacement, add on efficiency would be calculated using a dual baseline for underlying equipment efficiency.

<sup>1</sup> For building code, “most stringent” means that buildings built to this standard generally use the least energy, all else being equal.

<sup>2</sup> This refers to the average over units of equipment and conditions relevant to the EE application weighted by the prevalence of different units in the market. For example, for the market average efficiency level of applicable units available in the market, a sales-weighted average should be used.

<sup>3</sup> If the RUL of the existing equipment, systems, or construction is greater than the EUL of the EE Project, the dual baseline corresponds to the existing efficiency for the entire EUL. For more information see Section 2.3.

To determine the level of baseline consumption<sup>11</sup> that is consistent with this CPB, it is also necessary to identify the operating conditions—consistent with the list below—for the facility or equipment affected by the EE Project. Operating conditions are a function of factors such as facility occupancy levels, operating hours, production levels, or weather, and are frequently quantified in terms of the independent variables discussed in [Section 2.5.1](#) hereof.

### Key Terms for Operating Conditions for Determining Baseline Consumption

- **Operating conditions:** the conditions in which the EE Project or affected facility or equipment is used or operated.
- **Post-installation operating conditions:** the average operating conditions in the period after the EE Project is implemented, over the EUL of the EE Project.
- **Post-installation operating conditions without the add-on or operational improvement:** the average operating conditions in the period after the EE Project is implemented, over the EUL of the EE Project, but without the add-on or operational improvement.<sup>1</sup>
- **Post-completion operating conditions:** for new construction and major renovation that trigger a code requirement, the average operating conditions after the construction is completed and at normal ongoing operations, averaged over the EUL of the activity.

<sup>11</sup> Baseline consumption is the energy consumption that would have occurred at the baseline efficiency level and operating conditions.



- **No operational change:** for EE Projects including O&M improvements, the operating conditions that would have existed in the post-intervention period without those O&M improvements.

<sup>1</sup> In the case of an add-on measure such as building insulation or an operational improvement such as new controls systems, the baseline consumption corresponds to how the facility is operated on average in the post-installation period, but without the add-on or improvement.

To determine which type of baseline efficiency from the list above corresponds with the appropriate CPB for a particular situation, EE Providers can consider the following questions:

- Are there applicable codes or standards?
- What equipment, systems, or construction would be expected to be installed or constructed without the EE Project?
- If there are applicable codes or standards, are they more stringent than the equipment, systems, or construction that would be expected to be installed or constructed without the EE Project?

The text box below explores these questions for three common situations.

### Specifying CPBs for Common Situations

The questions below can help determine which type of baseline efficiency is the appropriate CPB in the following common situations:

**1. If no change would have been made within the life of the EE Project (without the project itself):**

Are there applicable codes or standards?

*While there may be related codes or standards, they typically apply to new installations or replacements or building codes that trigger new construction standards.*

What equipment, systems, or construction would be expected to have existed without the EE Project?

*The previously existing equipment or facilities.*

*Therefore, the baseline efficiency for the CPB is the efficiency of the previously existing equipment or facilities.*

**2. If the equipment or facilities would have been changed at the same time even without the EE Project, as in replacement on failure or for non-replacement new equipment or facilities:**

Are there applicable codes or standards?

*Often yes.*

What equipment, systems, or construction would be expected to have existed without the EE Project?

*The market average new equipment or facilities.*

*Therefore, the type of baseline efficiency for the CPB is the more stringent of a) any applicable codes or standards and b) the market average efficiency of new equipment or facilities.*

**3. For early replacement:**

Are there applicable codes or standards?

*Often yes.*

What equipment, systems, or construction would be expected to have existed without the EE Project?

*The existing equipment or facilities through the remaining useful life (RUL), and the market average of new equipment or facilities thereafter.*

*Therefore, the baseline efficiency for the CPB is the efficiency of existing equipment or facilities through the remaining useful life of the equipment or facilities, and the more stringent of any applicable codes or standards and the market average of new equipment or facilities thereafter. This is called a dual baseline.*

The *Applicable Guidance* below specifies for the indicated types of EE Projects how the CPB is determined and Asset Output calculated consistent with the definition above. For some of these EE Projects, the type of baseline efficiency that corresponds with the appropriate CPB is based upon the prevailing code or standards efficiency. This will be the case whenever market average efficiency is lower

than the applicable code or standard. For other EE Projects and contexts, the CPB specification is based on the market average efficiency. This will be the case for EE Projects or markets where compliance with the prevailing codes or standards is high, so that the market average efficiency is above the standards efficiency.

Recognizing that accurate determination of market average efficiency may be challenging in certain instances, the *Applicable Guidance* provides acceptable conservative alternatives to explicit calculation of market average efficiency. In still other situations, what would be typical or expected absent the EE Project is no change, so that the CPB corresponds to the existing equipment or practices.

### *Applicable Guidance*

#### Specifying CPBs

The CPB for a particular situation is specified by identifying the appropriate baseline efficiency from the list provided in the text box above. The following *Applicable Guidance* may be useful:

- Determine the CPB based on the type of EE Project and relevant context.
- Review the market averages and equipment-standards assumptions used to determine the CPB on a regular basis, for example in conjunction with technical reference manual (TRM) updates.
- If savings for a facility are quantified using whole-premises consumption methods (such as IPMVP Option C) or comparison group methods, describe how the analysis and normalization are designed to determine savings relative to the appropriate CPB. In these cases, it is not necessary to determine explicit CPB values for individual pieces of equipment. For example, if the CPBs for a combination of EE Projects are all based on existing equipment and the independent variables other than weather are the same in the pre- and post-installation periods, normalizing pre-installation consumption to the long-run average weather conditions provides savings relative to an appropriate CPB at the whole-facility level.
- To specify the operating conditions for calculating Asset Output as described in [Section 2.5.1](#) hereof:
  - Include all independent variables that materially affect energy consumption in the operating conditions.
  - If the EE Project does not change the operating conditions, quantify savings relative to the CPB at the post-implementation operating conditions.
  - If the EE Project affects the operating conditions (e.g., as it would for EE Projects that involve an O&M improvement), calculate savings relative to the CPB at the operating conditions that would be in place without the EE Project.

For each of the EE Projects in Table 2-1 below, the CPB is specified in terms of the baseline efficiency level. The baseline operating conditions at which Asset Output should be calculated are also indicated, with the definitions of efficiency levels and operating conditions provided in the *Key Terms for Baseline Efficiency and Specifying a CPB* and *Key Terms for Specify Operating Conditions for Baseline Consumption* text boxes above. [Section 2.5.1](#) hereof, discusses specification of operating conditions via independent variables.

For the EE Project types and contexts listed, the NEER considers the CPB specifications in Table 2-1 to be consistent with the definition of a CPB in most cases. While the table does not address each possible type of EE Project and context, it covers the significant majority that EE Providers are currently implementing. It is not intended to exclude any EE Projects. Additional information may be provided in the future as the EE marketplace evolves.

*Table 2-1. Typical CPB Specifications for Particular EE Project Types and Contexts*

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EE Project Type	Description	Context	CPB Specification	Operating Conditions for Determining Baseline Consumption <sup>12</sup>
Higher efficiency replacement	Replacement of existing facility equipment or structural components	Early replacement	Dual baseline	Post-installation
	with high efficiency new equipment	Replace on failure	Market / standards efficiency	Post-installation
Higher efficiency equipment in new installations	Installation of high efficiency equipment in new construction, major renovation, or other first installation of the equipment type that triggers a building energy code	Any	Market / standards efficiency	Post-installation
Add-on efficiency	Equipment or structural changes that can be added to existing facilities or equipment, such as insulation or controls	Added to existing facility without concurrent equipment replacement (not triggering code)	Underlying equipment efficiency	Post-installation without the add-on
		Added to existing facility with concurrent	New equipment or facility efficiency	Post-installation without the add-on

<sup>12</sup> The operating conditions for the baseline consumption are not necessarily the conditions that were in place prior to the EE Project, but are the conditions that would have been in place in the post-installation period in the absence of the EE Project. If the EE Project does not affect the operating conditions, the post-installation operating conditions are the operating conditions for the baseline consumption.

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		equipment replacement (not triggering code)	without the add-on efficiency	
		Included with new construction or major renovation (triggering code)	New equipment or facility efficiency without the add-on efficiency	Post-installation without the add-on
Operational or maintenance improvement	Changes in operating practices such as set points or run times	Any	Underlying equipment efficiency	Post-implementation without the operational or maintenance improvement

EE Project Type	Description	Context	CPB Specification	Operating Conditions for Determining Baseline Consumption <sup>13</sup>
Combination EE measures installed as part of the same EE Project <sup>14</sup>	Combinations of multiple EE measures and types (e.g., equipment replacement, operational improvement, add-on,	Any	Efficiency levels that would exist without the combination of measures, per the separate CPB	Post-installation without the combination of measures

<sup>13</sup> When measures are installed in combination, it may be simpler to calculate savings for the combination rather than attempting to calculate savings for each measure individually and then adjust for interactive effects.

<sup>14</sup> When measures are installed in combination, it may be simpler to calculate savings for the combination rather than attempting to calculate savings for each measure individually and then adjust for interactive effects.

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	new controls, building shell) that jointly affect the same systems		specifications (with interactive effects addressed per 2.5.2)	
New construction or renovation at higher efficiency	New construction or major renovation that triggers code, using higher efficiency than required by code	Any	Market / standards efficiency	Post-completion
New state-wide equipment standards	New efficiency standards for manufacture or sale of particular types of energy-using equipment	Any	Market / standards efficiency (prior to the new standards)	Average equipment use
Whole-building EE improvement	Comprehensive assessment and improvements to building shell, equipment, or operations	Any	Efficiency levels that would exist without the combination of measures, per the separate CPB specifications (with interactive effects addressed per 2.5.2)	Post-installation without the combination of measures
Mass market information and encouragement	Provision of information and encouragement to adopt a wide variety of physical and operational efficiency improvements, to large	Any	Structure and equipment absent the information and encouragement	Operations without the information and encouragement

	groups of customers with no enrollment requirement			
Building operations and maintenance training	Provision of training to building operators on particular types of building operations and maintenance improvements	Any	Existing facilities without operations and maintenance improvements due to training	Operations without the improvements due to training

The final two rows of Table 2-1 indicate CPBs for two common types of education/training or behavioral activities. These activities involve providing consultation, advice, information resources, and encouragement, but do not directly support the installation of physical EE Projects. Such activities can span a wide range of approaches and result in a wide array of physical and operational changes to facilities. As a result there is no one default CPB specification. In general for such programs the CPB and operating conditions for baseline consumption corresponds to the affected facility and operations as they would exist without the information or behavioral encouragement.

#### Applying an Adjustment Factor to Baselines where CPB is Not Used

- If an EE Provider uses a baseline other than a CPB to calculate Asset Output for its EE Projects (e.g., under a performance contract, existing EERS, etc) then it should either recalculate the Asset Output directly using a CPB, or develop and apply an adjustment factor to produce the Asset Output estimate relative to the CPB. An EE Provider should document how any such adjustment factor was determined. One adjustment approach is as follows:
  - Determine the ratio of Asset Output relative to the CPB vs. Asset Output relative to the other baseline.
  - Multiply the Asset Output relative to the other baseline by this ratio.
  - For example, suppose that a large number of 13W lamps are installed with a pre-specified EUL of 5 years. Suppose the total Asset Output was calculated as 120MWh/year relative to a 60W baseline, while the CPB baseline is 45W. The ratio of savings at the CPB versus savings at the original baseline is:

$$R = (45-13)/(60-13) = 32/47 = 0.68$$

The annual MWh Asset Output relative to the CPB would be:

$$\text{Savings}_{\text{CPB}} = R \times \text{Savings}_0 = 0.68 \times 120 \text{ MWh} = 81.6 \text{ MWh}$$

- For an existing EE program with established procedures for calculating gross or net savings, and for which the other specifications of this Guidance are met, the CPB may be applied as follows:
  - If the EE program's baseline for calculating gross savings is at least as stringent (represents at least as high efficiency) as the specified CPB in this Guidance, the gross savings using the program's existing methods may be reported as quantified Asset Output consistent with the NEER.



- If the EE program's net savings calculation can be shown to be at least as stringent as the savings quantification based on the specified CPB, the program's net savings may be reported as quantified Asset Output.

## 2.2 Asset Output Quantification Methods

This section presents *Discussion* and *Applicable Guidance* for each of three broad EM&V methods, beginning with *Discussion* and *Applicable Guidance* that applies to all three.

### 2.2.1 Applying EM&V Methods

#### *Discussion*

The NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)) requires the use of one or more of three broad EM&V methods to quantify Asset Output, including: 1) **deemed savings**, 2) **direct measurement and verification**, and 3) **comparison group** methods. Each of these methods is defined in best-practice protocols and is commonly applied by EE Providers, oversight agencies, and the entities they hire to quantify and verify Asset Output. The decision of which method(s) to apply for each EE Project involves consideration of factors such as objectives of the EE Project being evaluated, the scale of the project, and evaluation budget and resources.

#### Key Terms for EM&V Methods

**Deemed savings EM&V methods:** an Asset Output quantification approach that applies estimates of average annual Asset Output for a single unit of an installed EE Project that has been developed from data sources (such as prior metering studies) and analytical methods widely considered acceptable for the EE Project; and is applicable to the situation and conditions in which the EE Project is implemented. Deemed savings methods can include:

- *Deemed savings values* – pre-specified estimates of average annual Asset Output for an EE Project.
- *Deemed formulas* – pre-specified formulas for calculating savings, using some deemed parameters and some inputs that are specific to each EE Project.
- *Deemed parameter values* – pre-specified values of parameters that are used to calculate savings using a deemed formula.

**Direct measurement and verification:** an Asset Output quantification approach that uses onsite observations, engineering calculations, statistical analyses, and/or computer simulation modeling using measurements to determine Asset Output from an individual EE Project. In the context of an EE program or portfolio of related EE Projects, M&V is applied to a fraction of the total population of EE Projects and then scaled using statistical sampling and estimation to represent Asset Output from the total population. The International Performance Measurement and Verification Protocol (IPMVP), listed in Section 2.7, defines **two retrofit isolation** and **two whole-facility M&V options** used in the EE industry:

- *Retrofit isolation* – assessing savings from each EE Project individually (IPMVP Options A & B).
- *Whole facility* – analyzing savings from each EE Project in a project/facility collectively (IPMVP Options C & D).

Because the quantification process ordinarily involves direct observation of installed equipment or of its effects on whole-facility consumption, the process is referred to as direct measurement and verification, and a separate implementation verification step is not needed for the EE Projects subject to this process.

**Comparison group EM&V methods:** an Asset Output quantification approach, based on the differences in energy consumption patterns between a population of premises with EE Projects in place and a comparison group of premises without the EE Projects. Comparison group approaches include randomized control trials (RCTs) and quasi-experimental methods using nonparticipants and may involve simple differences or regression methods.

#### *Applicable Guidance*

Determine which of the EM&V methods to apply for quantifying Asset Output for each EE Project by referring to the *Applicable Guidance* in [Sections 2.2.2](#) through [2.2.4](#), hereof.

Apply the best-practice protocols and guidelines identified in those subsections and in [Section 2.7](#) hereof, (Use of EE EM&V Protocols and Guidelines). Examples include but are not limited to:

- International Performance Measurement and Verification Protocol (IPMVP, an international M&V protocol)<sup>15</sup>
- Federal Energy Management Program (FEMP) M&V Guidelines<sup>16</sup>
- American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) protocols and guidelines<sup>17</sup>
- California Energy Efficiency Evaluation Protocols<sup>18</sup>
- California Evaluation Framework<sup>19</sup>
- U.S. DOE, The Uniform Methods Project (UMP): Methods for Determining Energy Efficiency<sup>20</sup>

If EM&V plans as described in NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)), specify the use of protocols or guidelines, provide a list of applicable minimum provisions from these documents as well as a description of the applicable sections and methods that they describe. Simply referencing a specific protocol or guideline is not sufficient. For example, the IPMVP provides for four quantification options with flexibility regarding a number of savings calculation assumptions. The details of how a particular protocol or guideline will be applied are critical.

If using a combination method that consists of more than one of the three EM&V methods described here, clearly describe the basis and rationale for combining the methods. Examples of combination methods include:

- Use of comparison group methods to determine Asset Output relative to existing equipment, with engineering analysis using deemed parameters to adjust the result to Asset Output relative to a standards/market CPB, as referenced in [Section 2.2.4](#) hereof
- Use of deemed savings to determining initial Asset Output, with limited simulation analysis (M&V method, IPMVP Option D) to estimate adjustments for interactive effects

### 2.2.2 Deemed Savings Methods

#### *Discussion*

The deemed savings EM&V method uses pre-specified unit savings values or pre-specified formulas with some pre-specified parameter values as the basis for quantifying Asset Output.

Because deemed savings values are agreed upon in advance, such values can help alleviate some of the guesswork in program planning and design. To ensure that the deemed savings method provides

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<sup>15</sup> Evo-World. 2016. Available at: <http://evo-world.org/en/>.

<sup>16</sup> U.S. DOE Federal Energy Management Program. 2008. Available at: [http://portal.hud.gov/hudportal/documents/huddoc?id=doc\\_10604.pdf](http://portal.hud.gov/hudportal/documents/huddoc?id=doc_10604.pdf).

<sup>17</sup> ASHRAE. 2016. *Resources & Publications*. Available at: <https://www.ashrae.org/resources—publications>.

<sup>18</sup> California Public Utility Commission. 2006. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*. Available at: <http://www.calmac.org/publications/EvaluatorsProtocols%5Ffinal%5FadoptedviaRuling%5F06%2D19%2D2006%2Epdf>.

<sup>19</sup> California Public Utility Commission. 2004. *California Evaluation Framework*. Available at:

<http://www.calmac.org/publications/California%5Fevaluation%5Fframework%5Fjune%5F2004%2Epdf>.

<sup>20</sup> NREL. 2013-2015. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. Prepared by Cadmus Group. Available at: [http://energy.gov/sites/prod/files/2013/07/f2/53827\\_complete.pdf](http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf).



accurate savings estimates it is important to have a credible basis for the values applied and to ensure that criteria defined in applicable protocols and guidelines are followed. A best practice from utility EE programs is to document deemed savings values or deemed formulas in a transparent and freely available manner in a spreadsheet, an online searchable database, or similar resource. The term commonly used for such resources is a technical reference manual (TRM).<sup>21</sup> As of this document's publication approximately 20 TRMs are in use across the United States at the state and regional level. The methodologies for deriving deemed values can vary across jurisdictions, and some TRMs include information based on prior-year EM&V. Other TRMs include values based on computer simulations or engineering algorithms.

### *Applicable Guidance*

#### When to Use Deemed Savings Methods

- Apply deemed savings methods for relatively simple, well-defined EE Projects such as light bulbs or other electrical equipment for which the average operating characteristics that are the basis for the deemed values are well known, or where there is little uncertainty as to average unit Asset Output.
- Do not apply deemed savings EM&V methods for unique and custom applications.<sup>22</sup> This includes Assets with multiple EE Projects with complex interactive effects that cannot be comprehensively and accurately taken into account and documented.

#### How to Apply Deemed Savings Methods

- Implement deemed savings methods by applying the following steps:
  1. Establish Asset Output quantification formulas by specifying deemed parameter values, parameter applicability, and conditions for applying the formula. Deemed parameters may include per-unit savings values or average values of savings calculation formula inputs such as hours of use or equivalent full-load hours. The simplest form of a deemed savings calculation formula is simply savings per unit times number of units.
  2. Apply the formulas and documented measure counts to calculate pre-verified savings.
  3. Perform installation verification to confirm that units were installed, unit quantities, and appropriate application of deemed values and calculations. Installation verification may consist of reviewing independent third-party reports on measure installation rates based on customer surveys and/or onsite verification that installations were installed according to specification. The verification process may be based on a valid statistical sample that represents the entire population of EE Projects.
  4. Apply the formulas, parameters, and verified units to determine the total quantified savings.

#### Ensure that deemed values are:

- Based on EE Project type, applicability conditions, assumptions, calculations, and references that are publicly documented and available
- Quantified as the most likely averages of Asset Output and other factors that determine such values over the lifetime of the EE Project, such as average occupancy, typical weather, typical operating hours, and EUL

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<sup>21</sup> DOE. 2011. *Scoping Study to Evaluate Feasibility of National Databases for EM&V Documents and Measure Savings*. Prepared by Jayaweera, T.; Haeri, H.; Lee, A.; Bergen, S.; Kan, C.; Velonis, A.; Gurin, C.; Visser, M.; Grant, A.; Buckman, A.; The Cadmus Group Inc. Available at: [http://energy.gov/sites/prod/files/2013/11/f5/emvscoping\\_databasefeasibility\\_appendices.pdf](http://energy.gov/sites/prod/files/2013/11/f5/emvscoping_databasefeasibility_appendices.pdf).

<sup>22</sup> For more complex EE Projects with significant savings variability, consider the use of direct M&V or comparison group methods instead of deemed savings. While direct M&V and comparison group methods may include the use of deemed values for certain parameters used in the calculation of savings, the incorporation of direct measurement or consumption data analysis moves such methods outside of the deemed savings category.

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- Developed and vetted by independent, third parties and developed using analytical methods that are widely considered acceptable for the measure, purpose, and data sources (such as prior metering studies)
- Appropriately adjusted if borrowed from secondary sources from other geographic areas

Apply deemed savings methods as follows:

- Use deemed savings methods to quantify Asset Output from individual Assets. Apply these methods to a fraction of the total population of EE Projects and then scale using statistical sampling and estimation to represent Asset Output from the total population.
- Apply deemed values only for the specific EE Projects for which the values were developed.
- When a database or TRM with deemed savings values is updated based on new information, apply the revised deemed values and calculation methods only to EE Projects implemented after the effective date of the update. Do not apply the revised values to EE Projects for which EM&V has already been completed, unless the purpose is to develop and apply revised values was included in the EM&V plan.
- If deemed savings values, parameters, or formulas produces quantified Asset Output relative to a baseline that differs from the CPB in an EM&V plan for a respective EE Project, document and justify needed adjustments to the applicable deemed savings values, parameters, or formulas to ensure that Asset Output are quantified relative to the appropriate CPB or are otherwise more conservative than the CPB.

Ensure the Asset Output is adjusted for independent factors that affect energy consumption, as relevant, in accordance with [Section 2.5.1](#) hereof.

### Documentation

- Indicate the conditions for which each deemed savings value, parameter, or formula is applicable (e.g., climate, building type, end use, and measure implementation mechanism).
- Include information on the assumed baseline technology and conditions used to establish the deemed savings values, to ensure that deemed savings values reflect the appropriate CPB.
- Describe the CPB specification as indicated in [Section 2.1](#) hereof, for each deemed savings value.

### Resources

When applying deemed savings methods, use one or more best-practice protocols and guidelines. Examples include but are not limited to:

- ACEEE, Status and Opportunities for Improving the Consistency of Technical Reference Manuals<sup>23</sup>
- ACEEE, Behind the Curtain: Characterization of Measure Technologies within Technical Reference Manuals<sup>24</sup>
- ACEEE, Technical Reference Manuals Best Practices from Across the Nation to Inform the Creation of the California Electronic Technical Reference Manual (eTRM)<sup>25</sup>

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<sup>23</sup> T. Jayaweera, A. Velonis, H. Haeri, C. Goldman, S. Schiller. 2012. *Status and Opportunities for Improving the Consistency of Technical Reference Manuals*. American Council for an Energy-Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings. Available at: <http://aceee.org/files/proceedings/2012/data/papers/0193-000150.pdf>.

<sup>24</sup> Z. Tamble, M. Brown, B. Parnell, S. Lynch, R. Buckley, A. Maxwell. 2016. *Behind the Curtain: Characterization of Measure Technologies within Technical Reference Manuals*. ACEEE Summer Study on Energy Efficiency in Buildings. Available at: [http://aceee.org/files/proceedings/2016/data/papers/2\\_1182.pdf](http://aceee.org/files/proceedings/2016/data/papers/2_1182.pdf).

<sup>25</sup> A. Beitel, T. Melloch, B. Harley, A. Mejia. 2016. *Technical Reference Manuals Best Practices from Across the Nation to Inform the Creation of the California Electronic Technical Reference Manual (eTRM)*. ACEEE Summer Study on Energy Efficiency in Buildings. Available at: [http://aceee.org/files/proceedings/2016/data/papers/6\\_1027.pdf](http://aceee.org/files/proceedings/2016/data/papers/6_1027.pdf).

- Public Utility Commission of Texas, Approach to Texas Technical Reference Manual – Revised for version 3.0 (Final)<sup>26</sup>
- State and Local Energy Efficiency Action Network, Energy Efficiency Program Impact Evaluation Guide<sup>27</sup>
- Northwest Power & Conservation Council Regional Technical Forum<sup>28</sup>
- Lawrence Berkeley National Laboratory and U.S. DOE, Using Deemed Savings and Technical Reference Manuals for Efficiency Programs and Projects Webinar<sup>29</sup>

### 2.2.3 Direct M&V

#### *Discussion*

Applying a direct M&V method involves obtaining measurements from an individual EE Project installation site as a basis for quantifying Asset Output. For direct M&V-based savings quantification of individual EE Projects, the selected measurement technique is applied to a specific piece of equipment, for the site as a whole, or both. For direct M&V-based Asset Output quantification of an EE Project or an aggregation of EE Projects, direct M&V may be conducted for each EE Project in the group. It may also be conducted, as is more common, for a sample of projects with the sample results then used to determine Asset Output for the full group.

The application of direct M&V methods can establish accurate Asset Output for most EE Projects. However, these methods tend to be more expensive than deemed savings or comparison group methods. The cost for direct M&V is driven by factors such as the measurement equipment required, the measurement duration, the number of sample points needed at an individual EE Project, and the number and complexity of sites to obtain the targeted accuracy. The selection of direct M&V versus other methods therefore involves trade-offs between cost and level of uncertainty in the Asset Output, but may also establish greater certainty in the quantified Asset Output.

Several protocols (e.g., the IPMVP<sup>30</sup>) are considered industry standards that define terms, establish procedures, and serve as an overall framework for conducting direct M&V for Asset Output quantification of individual EE Projects. These best-practice protocols and guidelines define the type of consumption data and analysis used to quantify Asset Output and provide information about which options to use for different types of EE Projects. Common options and applications are summarized in Table 2-2 below. See the IPMVP for details.

*Table 2-2. Common Direct M&V Options and Applications*

Option	Option Name	Basis for Asset Output Calculation	Common Applications
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<sup>26</sup> Public Utility Commission of Texas. 2013. Approach to Texas Technical Reference Manual – Revised for version 3.0 (Final). Prepared by TetraTech.

<sup>27</sup> State and Local Energy Efficiency Action Network. 2012. Energy Efficiency Program Impact Evaluation Guide. Available at: [www.seeaction.energy.gov](http://www.seeaction.energy.gov).

<sup>28</sup> Northwest Power & Conservation Council, Regional Technical Forum. About the RTF. Available at: <http://rtf.nwcouncil.org/about.htm>.

<sup>29</sup> Lawrence Berkeley National Laboratory and U.S. DOE. 2016. Using Deemed Savings and Technical Reference Manuals for Efficiency Programs and Projects. June 27, 2016 Webinar. Available at: [https://emp.lbl.gov/sites/all/files/EMVWebinar\\_June2016.pdf](https://emp.lbl.gov/sites/all/files/EMVWebinar_June2016.pdf) and <https://www.youtube.com/watch?v=PLnBkgIQh68&feature=youtu.be>.

<sup>30</sup> Evo-World. 2016. Available at: <http://evo-world.org/en/>.

## National Energy Efficiency Registry Principles & Operating Rules

NEER Minimum EM&V Requirements ( <a href="#">Appendix 6.1.1.2[b]</a> )			
A	Partially Isolated Retrofit	End-use measurements of some parameters, with other parameters deemed	Lighting, with hours of use metered and kW savings deemed based on wattage of installed equipment with market/standards baseline
B	Retrofit Isolation	End-use measurement of energy consumption or proxy, with no deemed parameters	Systems with variable loadings such as motors
C <sup>31</sup>	Whole-Facility	Metered energy consumption for a whole facility, before and after EE Project is installed	Complex or combination EE Projects affecting multiple systems, where combined savings are at least 10 percent of whole-facility consumption and the CPB can be justified as based on existing conditions
D	Calibrated Simulation	Simulated whole-facility energy consumption with and without the EE in place, where the simulation model is calibrated to metered energy consumption for the post-installation period	Complex or combination measures affecting multiple systems, where prior existing equipment efficiency is not the CPB

Each of the direct M&V options above quantifies Asset Output as the difference in energy consumption for an EE Project with the EE in place compared to the baseline case. The quantification uses combinations of engineering formulas and regression models to estimate annual energy use, and is based on the metered or measured data for the post-installation operating conditions. Routine variations in independent variables such as occupancy, weather, production levels, and other interactive factors are captured in the range of measured or metered data or are accounted for by the formulas and modeling in order to derive annual energy use under the specified conditions. The analysis used to translate the

<sup>31</sup> Analysis of whole-premise metered consumption data (Option C of the IPMVP) may use similar building-level models to those applied for comparison group analysis described in [Section 2.2.4](#) hereof. Two differences between the use of these models for site-level direct M&V and the comparison group analysis are:

1. Site-level direct M&V is designed to estimate savings relative to the appropriate baseline for the individual site. The comparison group analysis produces savings for a program or group of similar
2. Site-level direct M&V uses additional information either to confirm that no other changes affected the facility over the analysis period, or else to support customized analysis to make any non-routine adjustments to savings estimates required to address changes. This type of custom, non-routine adjustment is not ordinarily included in comparison group

observed measurements into annual consumption values for the average post-installation condition of the independent variables is considered a “routine” adjustment.

Regardless of the direct M&V option used, the M&V process may also involve a custom or “non-routine” adjustment if the conditions for which savings are to be quantified are different from the conditions that were metered in ways that are not accounted for by the basic analysis formula or regression model. For example, one-time changes to a building’s occupied floor space, operating shifts, or equipment types might involve non-routine adjustments.

### *Applicable Guidance*

#### When to Use Direct M&V

- Use direct M&V methods for any type of EE Project where the physical address of installed measures is known.
- Use direct M&V methods used for EE Projects for which reliable deemed savings methods and values are not available or not applicable, and for populations of EE Projects that are not in sufficient number or homogeneity for control group EM&V methods to be applicable or feasible, such as because a control group cannot be identified.
- Use direct M&V methods for EE Projects that have highly savings variability or uncertainty due to differences in physical or behavioral characteristics across individual sites and applications. Also use direct M&V methods for large, complex projects or installations.

#### How to Apply Direct M&V

- To quantify Asset Output from an Asset (a single or aggregation of EE Project(s), program(s) or measure[s]) either:
  - Conduct direct M&V for each EE Project and scale the results to determine the Asset-level savings.
  - Conduct direct M&V for a randomly selected sample of sites and use statistical sample expansion to determine the Asset-level savings from the sample results.
- If statistical sampling and expansion will be used, ensure there is a large enough sample of EE Projects within an Asset, a sufficient number of EE measures within an individual EE Project site, and sufficient measurement quality across the Asset to meet statistical accuracy requirements.
- Ensure that direct M&V is conducted by staff who have the appropriate expertise, including:
  - Metering and measurement equipment selection, installation, sensing, and calibration
  - Statistical sampling and estimation methods for data collection related to facility energy use
  - Engineering analysis for facility energy use, including baseline specification
  - Field data collection quality control
- When measured or metered data results are combined with deemed parameters, match the observed data to the deemed values to ensure accurate results.
- Ensure that Asset Output quantified by direct M&V methods use the CPB as defined in [Section 2.1](#) hereof.<sup>32</sup> Before selecting a direct M&V method for EE Projects with a CPB that is not existing conditions,<sup>33</sup> ensure that a viable approach exists for modifying existing condition baseline energy use measurements to equate to the correct CPB. In some instances this may not be viable. In other situations adjustments can be made, for example:

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<sup>32</sup> Direct M&V is often conducted by equipment installers as a way to confirm that measures are working correctly or to demonstrate to the customer that they are achieving the expected improvements from the new equipment. These applications of direct M&V tend to use the existing equipment as the baseline, which may or may not be the required CPB as defined in [Appendix 6.1.1.2\(b\)](#) and illustrated above.

<sup>33</sup> In the context of utility EE Projects and privately-implemented EE Projects, direct M&V methods are commonly used for EE Projects for which existing condition baselines are appropriate.

- With a motor replacement project where the CPB is a new standard-compliant motor, IPMVP options A and B measurements of existing motor energy use can be adjusted with the use of a ratio of the efficiencies of a standard-compliant motor and the existing motor efficiency.
  - With a whole house retrofit project, where the CPB is a building energy code, IPMVP Option D could be used with a baseline building energy model calibrated for the existing house and then adjusted to code-compliant levels.
- Ensure that Asset Output is adjusted for independent factors that affect energy consumption, as relevant, in accordance with [Section 2.5.1](#) hereof.
- Quantify Asset Output for the long-term, post-installation operating condition. If ongoing measurement is not used, use appropriate engineering and statistical methods to adjust the metered and measured data to the long-term annual average condition, normalizing results for weather, productivity, and other routine and non-routine factors as needed.
- Follow good statistical practices for sampling of sites of EE Projects. Also follow good practices for sample design, sample management, and sample expansion to the full Asset level.
- If direct M&V is conducted for a sample of EE Projects, verification may be conducted for that sample or on a separate sample from within the overall population of EE Projects. In the latter case, combine the quantified Asset Output per measure from the direct M&V with the verified quantity of measures (e.g., equipment counts) to determine the total quantified Asset Output.
- Follow rigorous QA/QC, and training procedures.
- For an EE Project that is an operational improvement, the CPB is based on the efficiency of the underlying equipment without the operational improvement, as described in [Section 2.1](#) hereof. If the operational improvement can be cycled on and off at intervals over a full year, the CPB can be calculated from the periods when the improvement is off. This approach can be useful for EM&V of grid-side EE Projects,<sup>34</sup> in particular.
- Tools designed to apply an automated analysis of consumption data<sup>35</sup> may be used to quantify Asset Output by the direct M&V method, provided the general considerations described in this section are addressed. In particular, describe the quantification methods transparently and show how the analysis can provide savings relative to the appropriate CPB specification.

### Documentation

This M&V documentation guidance is based on best practice and is not necessarily required for M&V in the NEER. EM&V requirements can be found in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). Direct M&V-related documentation may include:

- Determination, identification, and isolation of measurement variable(s), including identification of the measurement variable and why was it selected (e.g., a ratio of ex post to ex ante EE Project-level Asset Output, duty factor for a residential air conditioner, on/off schedule for an industrial process).
- Sampling and expansion procedures, including how the sample was selected, how the number of sample points were determined, how the case weights were developed, identification of and reasoning for the coefficient of variation used to design the sample, how the individual measurement

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<sup>34</sup> Examples of grid-side EE Projects include voltage and VAR optimization (VVO) and conservation voltage regulation (CVR), which produce electricity savings by reducing voltage at the electrical feeder level.

<sup>35</sup> Examples of such tools and their uses and performance in EM&V and other contexts are described in:

- DNV GL. 2015. *The changing EM&V Paradigm - A Review of Key Trends and New Industry Developments, and Their Implications on Current and Future EM&V Practices*. Prepared for the Northeast Energy Efficiency Partnership Regional Evaluation, Measurement & Verification Forum.
- Granderson, J, Touzani, S, Custodio, C, Fernandes, S, Sohn, M, Jump, D. 2015. *Assessment of Automated Measurement and Verification (M&V) Methods*. Lawrence Berkeley National Laboratory, July 2015. LBNL#- 187225.
- Ethan A. Rogers, Edward Carley, Sagar Deo, and Frederick Grossberg. 2015. *How Information and Communications Technologies Will Change the Evaluation, Measurement, and Verification of Energy Efficiency Programs*. American Council for an Energy-Efficient Economy, Washington, DC.



results were expanded to the population, and how the statistical error metrics were quantified (e.g., confidence and precision levels).

- Planning documents that describe how direct M&V application will be applied at the level of the EE Project, as appropriate. Planning should address questions such as: What type of direct M&V approach was used (e.g., one or more of the four IPMVP methods, a combination, an alternative method)? How were baselines selected and estimated, including how they conform to the specifications in [Section 2.1](#), hereof? How was metering and monitoring conducted, including for how long? How was the data collected? What QA/QC procedures were used? How was Asset Output estimated?
- Reporting procedures, including how the savings results were compiled to produce overall reported savings estimates relative to the appropriate CPB.

### Resources

When applying direct M&V methods, use one or more best-practice protocols and guidelines. Examples include but are not limited to:

- International Performance Measurement and Verification Protocols (IPMVP)<sup>36</sup>
- U.S. DOE, The Uniform Methods Project (UMP): Methods for Determining Energy Efficiency Savings, see Chapter 11 – Sample Design Cross-Cutting Protocols<sup>37</sup>
- California Energy Efficiency Evaluation Protocols (2006), see Measurement and Verification Protocol and Sampling and Uncertainty Protocol<sup>38</sup>
- California Evaluation Framework Study (2004), see Chapter 7: Measurement and Verification and Chapter 13: Sampling<sup>39</sup>
- Federal Energy Management Program (FEMP) protocols and guidelines<sup>40</sup>
- American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) protocols and guidelines<sup>41</sup>

## 2.2.4 Comparison Group

### Discussion

As an EM&V method, comparison group methods are used to measure the effect of an EE Project on a group of end-use energy consumers. This approach is most commonly used for evaluation of publicly-funded EE programs, such as customer-funded utility EE programs. The same methods can also be applied to quantify Asset Output for a group of end-use customers that have implemented privately implemented EE Projects.

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<sup>36</sup> Evo-World. 2016. Available at: <http://evo-world.org/en/>.

<sup>37</sup> NREL. 2013-2015. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. Prepared by Cadmus Group. Available at: [http://energy.gov/sites/prod/files/2013/07/f2/53827\\_complete.pdf](http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf).

<sup>38</sup> California Public Utilities Commission. 2006. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*. Prepared by: The TecMarket Works Team. Available at: [http://www.calmac.org/publications/EvaluatorsProtocols\\_Final\\_AdoptedviaRuling\\_06-19-2006.pdf](http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf).

<sup>39</sup> California Public Utilities Commission. 2004. *The California Evaluation Framework*. Prepared by: The TecMarket Works Team. Available at: [http://www.calmac.org/publications/California\\_Evaluation\\_Framework\\_June\\_2004.pdf](http://www.calmac.org/publications/California_Evaluation_Framework_June_2004.pdf).

<sup>40</sup> DOE. 2016. *Federal Energy Management Program*. Available at: <http://energy.gov/eere/femp/federal-energy-management-program>.

<sup>41</sup> ASHRAE. 2016. *Resources & Publications*. Available at: <https://www.ashrae.org/resources--publications>.

Comparison group methods involve the analysis of whole-premises metered consumption data<sup>42</sup> for a group of customers who participate in an EE Project (the treatment group or program participants) and another group who did not participate (the comparison group). The comparison group indicates (directly or through additional analytics) the consumption or change in consumption the participating group would have had without the intervention. That is, the comparison group and associated analysis provides a baseline performance level or CPB against which the Asset Output is measured. When comparison group analysis is correctly applied, the comparison group represents the combined effect of the changes other than the EE Project being measured. To the extent the comparison group adequately reflects these other changes on average, explicit knowledge of and adjustment for these changes is not necessary.

An appropriate comparison group has minimal identifiable theoretic or empirical systematic differences from the treatment group, apart from the effect of the EE Project itself. The ideal basis for establishing a comparison group is by random assignment prior to implementing the EE Project. This technique avoids potential for bias, and also has statistically measurable accuracy. However, random assignment is compatible only with limited types of EE Projects, as described below.

When comparison groups are established by methods other than random assignment, two common risks to comparison group validity should be addressed. These are applicability and self-selection. Documenting how the comparison method produces savings relative to the appropriate CPB includes explaining how these two risks are addressed by the comparison group specification and analysis.

5. **Applicability**—In addition to being similar to those who participate in an EE Project in other ways, the comparison group must consist of energy using consumers or facilities for which the EE Project would have been applicable. Identifying such consumers or facilities can be challenging.
6. **Self-Selection**—Even if the entire pool of consumers is considered eligible, those who choose to implement an EE Project at a particular time may be different from those in the general population in ways that can affect energy use. For example, participants in an EE Project who are interested in installing energy-efficient equipment may have more efficient buildings to begin with and their consumption may respond differently than the typical non-participant's to changes in weather, the economy, or other factors affecting all customers.

After random assignment, a next-best basis for a comparison group is a “natural experiment” in which there are two very similar groups of participants in an EE Project. An example is one group who has a particular EE Project offering available to them and another group who did not. Another example is to implement the natural experiment over time, using customers who participate in a subsequent year as a comparison group for the participants who participate in a current year. This approach involves:

- The EE Project and other major economic conditions are similar over the measured year and the year of subsequent participation.
- There are minimal changes associated with the decision to participate in an EE Project in a particular year.

In Jurisdictions where advanced metering infrastructure (AMI) systems or “smart meters” have been installed for the applicable customer sectors, using daily or hourly consumption data can reduce statistical

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<sup>42</sup> Analysis of whole-premises metered consumption data can also be used as a site-level direct M&V method (IPMVP Option C) as described in [Section 2.2.3](#) hereof. Additionally, an evolving EM&V approach referred to as M&V 2.0 is of potential interest for EE providers seeking ERC issuance for an EE Project. M&V 2.0 refers to recently-developed approaches to measurement and verification of Asset Output using automated retrieval and processing of whole-premise metering data at high resolution due to advances in advanced metering infrastructure (AMI). These automated consumption data analysis tools may be used to implement direct M&V method “Option C” of the IPMVP protocol as described in [Section 2.2.3](#) hereof, or comparison group approaches as described in [Section 2.2.4](#) hereof, provided they are applied consistent with the guidance for those methods. These tools and approaches are not a different category of EM&V method. Instead, they can be a means of implementing whole-building consumption analysis for individual cases that is consistent with the direct M&V category of methods described in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)).



uncertainty for the estimated Asset Output. This improvement can make it possible to use comparison group methods for smaller magnitude savings than would otherwise be possible. On the other hand, use of daily or more frequent data involves more complex techniques to determine correctly the statistical accuracy of the Asset Output estimate.

Comparison group methods are most commonly applied in contexts where the CPB is based on by the existing conditions. With the appropriate analysis structure, other contexts can also be addressed by this method. See the list of applicable resources below for examples.

### *Applicable Guidance*

#### When to Use Comparison Group Approaches

Use comparison group methods to measure impacts of an Asset or a collection of participating buildings as a whole, not to determine Asset Output for individual EE Projects.

Apply comparison group methods only if the following are all true:

- The proposed comparison group with the planned analysis structure will provide a good representation of the participating group absent the EE Project.
- The expected statistical accuracy is adequate based on a power analysis or on the results from a prior study with similar analysis and conditions to the planned study (Appendix D of the California Protocols provides an example of how this can be implemented).<sup>43</sup>
- Whole-facility metered energy consumption data are available for the participating and comparison groups, with at least bimonthly meter reads.
- Key likely systematic differences between the comparison group and participant group can be controlled for via observable variables.
- The comparison group and analysis method yield savings relative to the appropriate CPB, per [Section 2.1](#) hereof. If this condition is met, separately determining the baseline efficiency of individual pieces of equipment is not needed.

#### How to Apply Comparison Group

- Ensure that practitioners hired to prepare such analysis have the specialized expertise necessary to implement a random assignment process, specify a comparison group, and perform analysis to isolate the intervention effect to produce savings relative to the CPB.
- Where possible, specify comparison groups using random assignment following best practices such as those described in resources from the SEE Action Network (2012)<sup>44</sup> and CALMAC (2016)<sup>45</sup>. The random assignment design must be specified in advance of delivery of the EE Project, and the EE delivery process must follow the design and random assignments. If such an assignment process is not practical for the program, use a quasi-experimental method. Specify the basis for establishing the comparison group.
  - If random assignment is used:

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<sup>43</sup> California Public Utilities Commission. 2006. California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals. Prepared by: The TecMarket Works Team. Available at: [http://www.calmac.org/publications/EvaluatorsProtocols\\_Final\\_AdoptedviaRuling\\_06-19-2006.pdf](http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf). Qualitatively, attaining good statistical precision depends on having sufficiently large savings with a sufficiently large and homogenous group of facilities or installations, such as several hundred residential or small commercial customers. That is, the magnitude of expected Asset Output is large compared to the expected random differences between the participant and comparison group averages.

<sup>44</sup> SEE Action Network. 2012. *Energy Efficiency Program Impact Evaluation Guide*. Available at: <https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide>.

<sup>45</sup> CALMAC. 2016. *A White Paper: Residential Portfolio Impacts from Whole-Premise Metering*. Prepared for the California Investor Owned Utilities. Available at: [http://www.calmac.org/publications/Res\\_Portfolio\\_Impacts\\_White\\_Paper\\_\(Final\)\\_DNVGL\\_1-22-2016\\_.pdf](http://www.calmac.org/publications/Res_Portfolio_Impacts_White_Paper_(Final)_DNVGL_1-22-2016_.pdf).

- Provide the random assignment design.
  - Document the steps taken to ensure delivery of the intervention according to the random assignments.
- If the EE Project did not follow a random assignment design, use a quasi-experimental approach.
- If a non-random-assignment comparison group is used, specify the basis for the comparison group specification and the likely self-selection effects, and qualitatively assess the resulting effects on the Asset Output.
- In cases where the comparison group for a particular program year or set of EE Projects is re-analyzed in successive years to provide direct quantification of Asset Output from surviving EE Projects, include a discussion of the basis on which the comparison group remains appropriate and valid.
- Provide the basis for interpreting the results as Asset Output relative to the appropriate CPB
- Design the sample sizes to be large enough to ensure statistically significant Asset Output
- Ensure the Asset Output are adjusted for independent factors that affect energy consumption as relevant, in accordance with [Section 2.5.1](#) hereof
- Collect sufficient consumption data from before and from after the intervention to include observations from each season and all operating patterns in each of the two periods (before and after). Typically this coverage involves 9 to 12 months of data from each of the two periods.
- If the comparison group consists of participants who did not replace EE equipment and the appropriate CPB corresponds to standard new equipment, conduct a separate adjustment to produce savings relative to the correct baseline. For examples of adjust processes see Goldberg et al.,<sup>46</sup> 1997 or Agnew, 2009.<sup>47</sup>
- If daily or more frequent consumption data are used, document the steps taken to ensure correct calculation of statistical accuracy
- Apply tools designed for automated analysis of consumption data<sup>48</sup> to quantify Asset Output by comparison group methods, provided the general considerations described in this section are addressed. In particular:
  - Describe the calculation methods transparently
  - Clearly describe the comparison group selection process and show the process is appropriate from the EE Project.
  - Show how the analysis can provide Asset Output relative to the appropriate CPB specification.

## Documentation

Include the following as part of a comparison group analysis documentation:

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<sup>46</sup> M. Goldberg, T. Michelman, C.A. Dickerson. 1997. *Can We Rely on Self Control?* Proceedings of the 1997 International Energy Program Evaluation Conference. Chicago, IL.

<sup>47</sup> K. Agnew, M. Goldberg, B. Wilhelm. 2009. *A Pacific Northwest Efficient Furnace Program Impact Evaluation*. Proceedings of the 2009 International Energy Program Evaluation Conference.

<sup>48</sup> Examples of such tools and their uses and performance in EM&V and other contexts are described in:

- DNV GL. 2015. *The changing EM&V Paradigm - A Review of Key Trends and New Industry Developments, and Their Implications on Current and Future EM&V Practices*. Prepared for the Northeast Energy Efficiency Partnership Regional Evaluation, Measurement & Verification Forum
- Granderson, J, Touzani, S, Custodio, C, Fernandes, S, Sohn, M, Jump, D. 2015. *Assessment of Automated Measurement and Verification (M&V) Methods*. Lawrence Berkeley National Laboratory, July 2015. LBNL#- 187225.
- Ethan A. Rogers, Edward Carley, Sagar Deo, and Frederick Grossberg. 2015. *How Information and Communications Technologies Will Change the Evaluation, Measurement, and Verification of Energy Efficiency Programs*. American Council for an Energy-Efficient Economy, Washington, DC.

- If random assignment is used, a description of the randomization design, how it was implemented, what steps were taken to ensure adherence to the random assignments, and what deviations, cross-contamination, or dropouts occurred
- The rationale for the comparison group specification, what the comparison group represents, what conditions are controlled for by the analysis
- The estimation method and rationale, including how the analysis provides a valid estimate of Asset Output with respect to the appropriate CPB, per [Section 2.1](#) hereof
- The values of statistical accuracy
- A description of the data screening criteria used, and the data attrition at each screening stage
- The response rates if survey data are used in the analysis
- A discussion of the threats to validity of the analysis, including systematic errors and their potential magnitude

### Resources

When applying comparison group methods, use one or more best-practice protocols and guidelines. Examples include:

- State and Local Energy Efficiency Action Network, Energy Efficiency Program Impact Evaluation Guide<sup>49</sup>
- U.S. DOE, The Uniform Methods Project (UMP): Methods for Determining Energy Efficiency Savings<sup>50</sup>
- CALMAC, A White Paper: Residential Portfolio Impacts from Whole-Premise Metering<sup>51</sup>
- Agnew et al., A Pacific Northwest Efficient Furnace Program Impact Evaluation<sup>52</sup>
- Goldberg et al, Can We Rely on Self Control?<sup>53</sup>

## 2.3 Effective Useful Life

### Discussion

#### Key Term

**Effective useful life (EUL):** the duration of time an EE Project is anticipated to remain in place and operable with the potential to save energy.

The Asset Output from an EE Project installed in a particular year accrue for the duration of time for which it is in place and operable. The typical practice for utility-customer funded EE programs and for many ESCos is to apply one or more EM&V methods to quantify and report Asset Output for the first year and then to credit savings based on this determined amount for each year of the lifetime of the project or

<sup>49</sup> SEE Action Network. 2012. *Energy Efficiency Program Impact Evaluation Guide*. Available at: <https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide>.

<sup>50</sup> NREL. 2013-2015. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. Prepared by Cadmus Group. Available at: [http://energy.gov/sites/prod/files/2013/07/f2/53827\\_complete.pdf](http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf).

<sup>51</sup> CALMAC. 2016. *A White Paper: Residential Portfolio Impacts from Whole-Premise Metering*. Prepared for the California Investor Owned Utilities. Available at: [http://www.calmac.org/publications/Res\\_Portfolio\\_Impacts\\_White\\_Paper\\_\(Final\)\\_DNVGL\\_1-22-2016\\_.pdf](http://www.calmac.org/publications/Res_Portfolio_Impacts_White_Paper_(Final)_DNVGL_1-22-2016_.pdf).

<sup>52</sup> K. Agnew, M. Goldberg, B. Wilhelm. 2009. *A Pacific Northwest Efficient Furnace Program Impact Evaluation*. Proceedings of the 2009 International Energy Program Evaluation Conference.

<sup>53</sup> M. Goldberg, T. Michelman, C.A. Dickerson. 1997. *Can We Rely on Self Control?* Proceedings of the 1997 International Energy Program Evaluation Conference. Chicago, IL.

measure. The length of time over which annual Asset Output are credited is referred to as the effective useful life (EUL).

An alternative to specifying an EUL up front in the EM&V plan is annual verification, as described in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). Annual verification means conducting installation verification activities on an annual basis and determining Asset Output for each year using this new data collection. For relatively simple measures, the quantified and verified Asset Output for each year may be the average savings per EE Project scaled by the counts of the number of installed or operating measures. For more complex EE Projects, annual direct M&V may be applied to determine changes in operating parameters. If the annual verification approach is used, the EM&V plan must specify how the results of the annual verification will be used to adjust the quantified and verified Asset Output for each year.

The ideal basis for determining an EUL is by field observation. Of the three methods allowed by the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)) for establishing a pre-specified EUL (i.e., based on a recent applicable persistence study, deemed based on an applicable TRM, or based on an independent third-party laboratory lifetime testing protocol), a best-practice persistence study is the most accurate in most cases. A common interpretation and basis for estimating EULs from such a study is that an EUL is the median length of time that EE Projects are in place and operable. Interpretation of the EUL as a median or average life means that some EE Projects will fail or go out of service sooner and some will last longer.

Example EULs for particular EE Projects are also provided. Table 2-3 identifies EULs based on a variety of industry sources. They are provided for illustration only and should not be assumed as best-practice EUL values for a particular EE Project.

*Table 2-3. Illustrative Examples of EULs for Various EE Project Types<sup>54</sup>*

Sector	Measure Type	Illustrative EUL
Residential	Clothes Dryers*	12
Residential	Clothes Washers	11
Residential	Dishwasher	10
Residential	Faucet Aerator	10
Residential	Low Flow Shower Head	5
Residential	Pipe Insulation	13

<sup>54</sup> Values marked with an asterisk (\*) are from U.S. EPA ENERGY STAR. Available at: <https://www.energystar.gov/>. All other values are from Savings Calculator Tool prepared by DNV GL for U.S. Department of Energy Office of Weatherization and Intergovernmental Programs, managed by Oak Ridge National Laboratory. Used for:

- April 2015 *National Evaluation of the State Energy Program*. Available at: <http://energy.gov/eere/wipo/downloads/state-energy-program-national-evaluation>.
- June 2015 *National Evaluation of the Energy Efficiency and Conservation Block Grant Program*. Available at: <http://energy.gov/eere/wipo/about-energy-efficiency-and-conservation-block-grant-program>.

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Residential	Room Air Conditioners*	9
Residential	Water Heater – Heat Pump	11.2
Residential	Water Heater – Tankless	17.5
Nonresidential	Chiller	23
Nonresidential	HVAC Controls, VFD, Motors	15
Nonresidential	Walk-in Equipment (Nonres); Refrigerator and Freezers (Res)	12
Res/Nonres	Air Sealing (Package AC, Chiller Space Cooling, Heat Pump, Boiler)	11
Res/Nonres	Boilers	20
Res/Nonres	Furnaces*	15
Res/Nonres	Building Shell (Windows, Doors, Insulation)	19
Res/Nonres	Cool Roofs	15
Res/Nonres	Energy Management Controls	10
Res/Nonres	HVAC	15
Res/Nonres	Lighting – CFL*	5
Res/Nonres	Lighting – Other	11
Res/Nonres	Water Heater – Storage	13

### *Applicable Guidance*

- Participate in collaborative and joint research to improve the breadth and quality of EUL values (several such research activities are ongoing in states around the country).

### Annual Verification

- If annual verification is used:
  - Specify in the EM&V plan that annual verification will be used and how the annual verification results will be used to determine the quantified and verified Asset Output for each year.

- For the initial year of installation and for each year thereafter, conduct verification in accordance with [Section 2.4](#) hereof to determine what portion of the total installed EE Projects remain in place and operable. Quantify Asset Output based on the portion that is found to still be in place and operable.

#### Pre-Specified EUL

- Document the source of each pre-specified EUL for EE equipment installation or operational improvement, consistent with the three allowable categories in the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)):
  1. Based on a recent applicable persistence study conducted according to the provisions of a best practice protocol for determining EUL values and with EUL estimated with 80/20 confidence/precision or better. An example of a best practices protocol for such studies is the Effective Useful Life Evaluation Protocol of the California Energy Efficiency Evaluation Protocols (2006).<sup>55</sup>
  2. Based on an applicable TRM, meeting the *Applicable Guidance* for specifying and updating deemed values under [Section 2.2.2](#) hereof.
  3. Based on an independent third-party laboratory lifetime testing protocol.
- When a pre-specified EUL is used, the following lifetime equivalent EUL calculation may be applied to simplify annual quantification for dual baseline or combination measures. To apply this calculation, use a single lifetime equivalent annual savings (LEAS), as follows. Apply that savings quantity for each year from the first year of a dual-baseline EE Project installation through the full EUL, or for the longest EUL of a combination of measure denoted below by EUL<sub>max</sub>.
  - For a dual baseline measure with annual Asset Output S<sub>1</sub> from the first year through the RUL, and annual savings S<sub>2</sub> for the remainder of the EUL, calculate the lifetime-equivalent annual savings as:
$$LEAS = (S_1RUL + S_2(EUL-RUL))/EUL$$
  - For a combination measure with annual Asset Output contributions S<sub>c</sub> with EULs EUL<sub>c</sub> for different measure components c, the lifetime-equivalent annual Asset Output is quantified as:
$$LEAS = \sum c(S_cEUL_c)/EUL_{max}$$
  - The LEAS formulas may be applied to successive levels of aggregation of EE Projects using a previously quantified LEAS in place of the savings S<sub>c</sub>, and the corresponding full EUL or EUL<sub>max</sub> on the right hand side of either formula.

## 2.4 Verification of EE Project Installation

### Discussion

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<sup>55</sup> California Public Utilities Commission. 2006. California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals. Prepared by: The TecMarket Works Team. Available at: [http://www.calmac.org/publications/EvaluatorsProtocols\\_Final\\_AdoptedviaRuling\\_06-19-2006.pdf](http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf).

**Key Term**

**Verification (of EE Project):** an assessment by an independent entity to ensure that the EE Projects have been installed correctly and can generate the predicted savings.

As described in [Section 2.1](#) hereof determining Asset Output from an Asset involves both verification that an EE Project has been installed and quantification of total Asset Output for the group of verified installations. Verification is applied for purposes of confirming both that the EE Project is in place and has the potential to save energy. This means that the equipment or affected facility is in regular use. Site inspections, phone and mail surveys, and desk review of program documentation are typical verification activities. Verification may also include assessing baseline conditions and confirming that the EE Project(s) are operating according to their design intent.

*Applicable Guidance*

- Where practical (e.g., for an Asset involving the installation of a small number of units or affecting a small number of facilities), conduct verification for each EE Project to confirm that the applicable equipment and systems are in place, capable of operating as intended, and have the potential to deliver the projected Asset Output. Capable of operating as intended means that the equipment or affected facility is in regular use.
- In cases where verifying each EE Project that comprise an Asset is not feasible or practical:
  - Design a sample of such EE Projects, including corresponding sample expansion methods, using established statistical sampling and estimation practices. An example is described in Appendix B of the IPMVP.
  - Conduct verification for the sample.
  - Use the sample data and sample expansion methods to determine installation rates and other adjustment factors for the full Asset.
- For the following common EE Projects, use these verification strategies:
  - For **EE retrofits** or **early replacement**, confirm (1) installations of the indicated EE Projects, (2) the efficiency levels and operating conditions of the installed EE Projects and CPB, and (3) that the EE Projects are operating correctly such that they can generate the predicted Asset Output.
  - For **EE new construction projects** involving whole-building efficient design, confirm the building's actual specifications as built, confirm that the CPB specifications are appropriate, and review and confirm commissioning documentation.
  - For **EE point-of-sale rebate** or **distributor incentive programs**, confirm the sales data used for determining equipment counts and verify installation and operations with a sample of end-user purchasers.
- As described in [Section 2.3](#) hereof:
  - If a **pre-specified EUL** is established, conduct verification once as part of the overall Asset Output quantification and verification process.
  - If **annual verification** is used, repeat the verification each year for a given EE Project, and quantify a revised Asset Output value for the surviving units based on verification findings.
- If **comparison-group methods** are applied as described in [Section 2.2.4](#) hereof, or **direct M&V methods are applied using whole-facility analysis** as described in [Section 2.2.3](#) hereof, the analysis is considered to provide a combination of Asset Output quantification and verification. That is, the Asset Output quantified using a comparison group or direct M&V is based on energy



consumption data that reflect both what was actually installed and operating as well as the operational practices that affect the Asset Output. Separate verification activities are therefore not necessary.

- If direct **M&V methods** are applied as described in [Section 2.2.3](#) hereof, in a manner that combines the M&V samples and processes, the M&V results may provide an adjustment factor to *ex ante* savings that reflects both installation verification and Asset Output quantification. Therefore, a separate estimate of the installation rate or adjustment factor based on verification alone is not needed.

## 2.5 Additional Aspects of Asset Output Quantification

### 2.5.1 Independent Variables Affecting Energy Consumption and Asset Output

#### *Discussion*

Observed changes in energy consumption are the result of changes in a variety of independent variables and influences, in addition to the effect of the EE Project. These independent variables range from the outdoor temperature to occupancy levels in a building to industrial production levels. To isolate the Asset Output that result from an EE Project, each of these independent variables that is material to the savings determination must be controlled for. Controlling for independent variables is critical to the credibility of savings estimates, and distinguishes properly quantified savings values from a simple and unreliable comparison of energy use before and after implementation of an EE Project.

Controlling for the independent variables means ensuring that:

- The quantified Asset Output do not inadvertently include effects of changes in independent variables.
- The Asset Output is quantified for correct values of the independent variables.

Independent variables are controlled for either by confirming that they are constant over the quantification periods, or by explicitly adjusting consumption or output calculations to what would have occurred at other levels of the variables using engineering or statistical methods. Independent variables that are constant over the periods of interest – and that are consistent with assumptions used when applying one of the three allowable EM&V methods – do not involve explicit analysis or adjustment.

As described in [Section 2.1](#) hereof, determination of the baseline consumption level depends on both the CPB and the operating conditions. Operating conditions are specified in terms of independent variables. Many EE Projects affect equipment and systems in place, but don't affect how the equipment or facility is used (e.g., hours that a piece of equipment is operating). For such activities, the operating hours or other indicators of how the equipment is used are among the independent variables that must be considered in calculating output. Operating conditions for determining baseline consumption are the post- installation operating conditions.

#### **Key Term**

**Independent variables:** variables (e.g., weather, occupancy, production levels) that affect energy consumption and savings, and vary *independently* of the EE Project under study.

Other EE Projects, such as installation of equipment control systems or new operating practices do affect how equipment or facilities are used. For these activities the operating pattern for determining baseline consumption is the practices that would have been in place during the post-installation period without the



effect of the EE Project. In these cases, the independent variables that must be controlled for in the Asset Output calculations may be higher level indicators of the level of activity in the facility, rather than the runtime of the equipment. Since the runtime of the equipment is affected by the EE Project, it is not an independent variable.

For example, if the efficient lighting installed does not affect hours of lighting use, baseline consumption is calculated at the post-installation hours of use. If the efficient lighting EE Project includes new controls to reduce hours of lighting use, baseline consumption is calculated at the hours of lighting use that would have occurred in the post-installation timeframe absent the new controls. If the facility operating hours are different between the pre- and post-installation periods, the hours of lighting use for the baseline consumption calculation are based on the hours of use that would have been needed in the post-installation period, if the lighting controls were not present.

Each of the three EM&V methods described in [Section 2.1](#) hereof, has a mechanism for accounting for independent variables. For deemed savings values, independent variables are implicitly controlled for through the associated applicability conditions (see [Section 2.2.2](#) hereof). For direct M&V, these variables are adjusted for via the use of regression analyses, computer simulation modeling, or engineering calculation (non-routine) adjustments. For comparison group methods, independent variables are controlled for through the comparison group specification and consumption data regression analyses.

#### *Applicable Guidance*

- Identify the independent variables that affect energy consumption and Asset Output. At a minimum, consider the following and control for them as described below, unless they can be assumed to be constant over the life of the EE Project, or they will not affect Asset Output.
  - Weather
  - Equipment or facility hours of operation
  - Activity level as measured by variables such as occupancy, number of shifts, manufacturing production level, or number of meals served.
- Within a single Asset, quantify Asset Output for the constituent EE Projects using consistent assumptions for independent variables across different EE Projects. For example, use consistent forecasts of future weather within a given geographic area, and use consistent operating hours assumptions within a given market segment. Assumptions may vary across market segments and geographies based on known characteristics.
- Quantify Asset Output using values of independent variables that are expected to apply over the life of the Asset, using one of the following two approaches:
  - Actual conditions that exist over the period when the Asset Output occurs, if these conditions are measured throughout the EUL (e.g., via ongoing direct M&V or annual verification)
    - With this approach, adjust baseline energy consumption data to reflect actual independent variables observed after the measure is in place and fully operating.
    - Examples of independent variables based on actual post-installation conditions are:
      - Observed weather conditions for a residential heating EE Project
      - Observed occupancy rates for a commercial building lighting EE Project
      - Observed equipment production rates for an industrial efficiency project
- Normalized or standardized (typical) conditions that can be reasonably expected to occur throughout the EUL
  - With this approach, both baseline and performance period data on energy consumption are normalized to data on the independent variables, where reasonable and appropriate. Examples of normalized independent variables based on typical conditions are:
    - Typical weather conditions for a residential heating EE Project
    - Typical occupancy rates for a commercial building lighting EE Project

- Typical equipment production rates for an industrial efficiency project

**Key Term**

**Interactive effects:** increases or decreases in the use of electric or non-electric energy that occur outside of the end uses targeted by a specific EE Project. For example, reduction in lighting loads through an energy-efficient lighting retrofit can reduce a building's air conditioning and increase heating requirements because less heat is generated by energy-efficient lighting systems compared with less efficient lighting systems. For purposes of the NEER, only interactive effects on energy consumption are addressed.

- Where first-year Asset Output values—derived by applying first-year independent variables—are used to represent annual Asset Output for the EUL of the Asset, provide a justification for why this is a reasonable assumption (i.e., justify why first-year independent variables can be shown to represent standard/typical conditions over the life of the measure, consistent with the second sub-bullet of the previous main bullet).

### 2.5.2 Interactive Effects

#### *Discussion*

EE Projects often have indirect impacts on electric and non-electric energy use in end-use systems not directly affected by the subject measures. There are two primary types of Interactive effects:

**Equipment and facility improvement interactions.** When multiple EE Projects are installed at the same time, the Asset Output from the combination of EE Projects is often different from the sum of the Asset Output that would result from installing each one absent the others. For example, Asset Output from the combination of high-efficiency electric equipment, building shell improvements, and building controls is less than the sum of the Asset Output from installing each of these without the others. The interactive effect can be addressed in one of two ways:

1. As an integrated calculation. Determine consumption with the combination of EE Projects without any of the EE Projects in place, and take the difference.
2. As a sequence of EE Project-specific calculations. In this case the order in which the EE Projects are assumed to be installed matters. In the example above, taking the EE Projects in the indicated order, Asset Output would be calculated for the following:
  1. the high-efficiency electric equipment by itself
  2. the building shell improvements with the high-efficiency electric equipment included in the baseline specification
  3. the building controls, with the high-efficiency equipment and building shell improvements included in the baseline specification.

Both these methods should produce the same output for the combination, but the second method allocates output to the separate EE Projects, according to the assumed installation sequence.

**Inter-end-use interactions:** Certain EE Projects indirectly affect an end use or system other than the one directly affected by the EE Project. For example, installing efficient lighting in a building's cooled and heated space can decrease the energy use of cooling systems and/or increase energy use in heating

systems. To address inter-end-use interactive effects, it is necessary to identify the other end uses affected by the EE Project, and calculate the associated change, usually using engineering calculations. For example, the change in heating and cooling loads due to a lighting improvement is determined by applying an interactive factor to the lighting output. The interactive factor accounts for the proportion of the lighting energy that is consumed in heated or cooled space. (See for example UMP Chapter 2 on Commercial and Industrial Lighting Evaluation, Section 3.)

### *Applicable Guidance*

- Specify in EM&V plans how interactive effects on *energy consumption* will be quantified.
  - If interactive effects are treated as zero, justify why this is an appropriate assumption.
  - If **deemed savings** methods are used, include interactive effects in the deemed savings values or separately estimate these effects using deemed methods.
  - If **direct M&V** methods are used,
    - Quantify interactive effects explicitly if methods based on sub-facility measurements, such as isolated retrofits or partially isolated retrofits, are used.
    - Incorporate interactive effects directly into the Asset Output calculations if building simulation is used. Most building simulation tools and approaches are designed to incorporate interactive effects in their Asset Output calculations.
  - If **comparison group** methods are used, do not make an additional adjustment for interactive effects. With these methods, interactive effects on the same fuel are automatically incorporated in the Asset Output calculations.
- Use the UMP<sup>56</sup> or other applicable protocols and methods to estimate interactive energy effects.

## 2.5.3 Transmission and Distribution (T&D) Savings and Adders

### *Discussion*<sup>57</sup>

The difference between the electricity generated (busbar value) and consumed (end-user meter value) is due to losses in the transmission and distribution (T&D) system. U.S. Energy Information Agency (EIA) data from 1990 to 2012 indicates that national, average annual T&D electricity losses are about 6 percent of the electricity that is transmitted in the United States.<sup>58</sup> Every unit of energy consumption avoided through EE Projects at an end-use site also avoids losses that would have occurred as that electricity was delivered through the T&D system. *Applicable Guidance* on how T&D savings can be added to end-use electricity savings values follows.

#### **Key Terms for Accuracy**

**Accuracy:** how close an estimate is to the true value it estimates. The term can be used in reference to a point estimate resulting from a sequence of analytic steps, model coefficients, a set of measured data, or a measuring instrument's capability.

<sup>56</sup> U.S. DOE's Uniform Methods Project (UMP) is one such example. See UMP chapter 2 for details. NREL. 2013-2015. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. Prepared by Cadmus Group. Available at: [http://energy.gov/sites/prod/files/2013/07/f2/53827\\_complete.pdf](http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf).

<sup>57</sup> The discussion of Transmission and Distribution (T&D) Savings and Adders is not relevant to natural gas EE Projects.

<sup>58</sup> EIA. 2016. *How much electricity is lost in transmission and distribution in the United States?* Accessed September 14, 2016. Available at: <http://www.eia.gov/tools/faqs/faq.cfm?id=105&t=3>.

#### *Applicable Guidance*

- For Assets that do not otherwise incorporate avoided T&D losses in their quantification, a T&D loss factor may be calculated in accordance with NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). The total Asset Output for an Asset can then be adjusted by multiplying the total verified Asset Output by the T&D loss factor. The T&D line-loss rate should be rounded to the nearest thousandth (i.e., expressed in no more than three decimal points) before applying the adjustment.
  - For example, if total Asset Output were 100s,000 MWh and the calculated T&D loss factor was 0.050, then total claimed Asset Output inclusive of T&D losses would be 105,000 MWh
- Include references to EIA 861 data and explicit variables used in calculation of the T&D loss factor, the type loss factor applied (i.e., utility specific or statewide), and rationale for selection of the loss factor.

#### **2.5.4 Accuracy of Asset Output**

##### *Discussion*

A best practice for EM&V planning among customer-funded EE programs administered by utilities is to characterize the accuracy of how Asset Output will be determined based upon the selected EM&V methods. The accuracy of quantified Asset Output is a function of the following two types of error:

- **Systematic error:** estimation errors that may cause an estimate (such as an Asset Output value) to be consistently either overstated or understated. Systematic errors are also referred to as bias, and may result from incorrect assumptions, a methodological issue, or a flawed reporting system.
- **Random error:** estimation errors occurring by chance that may cause an estimate (such as an Asset Output value) to be overestimated or underestimated with no systematic tendency in either direction, resulting from uncontrolled and unobservable factors affecting the underlying measurements.

The magnitude of random error can be quantified based on the variations observed across different EE Projects. It is important to report such random error, describe the steps that have been taken to minimize the potential for systematic error, and provide a subjective assessment of the potential effects of both types of error.

The key sources of quantifiable random error that can result from applying EM&V methods include:

- **Random sampling error**, including error that results from the selection of samples of customers, EE Projects within an Asset; selection of individual EE measures to be observed within a facility; and random assignment in the context of comparison group methods
- **Modeling error**, when a regression model or other statistical estimation is used to estimate savings or savings parameters

##### *Applicable EM&V Approach*

- Design assumptions needed for Asset Output quantification to provide neither optimistic savings estimates (aiming to err on the high side) nor conservative estimates (aiming to err on the low side).
- If sampling is used to quantify Asset Output values, report the achieved confidence/precision of the associated estimates.
- Apply and cite applicable best-practice protocols and guidelines documents for sampling. Examples of best practices for statistical sampling are described in the following resources:

- ISO New England Manual for Measurement and Verification of Demand Reduction Value from Demand Resources<sup>59</sup>
- The California Evaluation Protocols<sup>60</sup>
- Uniform Methods Project *Sample Design Cross-Cutting Protocol* (Chapter 11)<sup>61</sup>
- For all EM&V methods, document potential sources of quantifiable statistical error (and associated quality-control measures) in EM&V plans and M&V reports.
- For **deemed savings**:
  - Describe reasons the deemed savings values or parameters may not be valid in the context of their applicability conditions.
  - Quantify random errors if applicable.
  - Calculate and report the statistical error of any EM&V parameters determined using sampling.
- For Asset Output determined by **comparison group** methods, report the statistical confidence intervals or confidence and relative precision levels of the program savings measured by the comparison group analysis. Examples of protocols and guidelines that describe how this can be implemented include:
  - SEE Action Guide on evaluating behavior programs<sup>62</sup>
  - Uniform Methods Project Sample Design Cross-Cutting Protocol (Section 11)<sup>63</sup>
  - Uniform Methods Project Whole-Building Retrofit Evaluation Protocol (Section 8)<sup>64</sup>
- To determine the quantifiable statistical error for the sum of quantified Asset Output from several EE Projects, the following formula may be used if the Asset Output estimates were all based on independent samples or data sets:

$$RP(S_{TOT}) = [\sum_k (S_k RP(S_k))^2]^{1/2} / S_{TOT}$$

Where

$S_k$  = quantified savings for program k

$$S_{TOT} = \sum_k S_k$$

$RP(S)$  = relative precision of S at 90% confidence, that is the half-width of the 90% confidence bound, as a percent of the point estimate.<sup>65</sup>

<sup>59</sup> ISO-NE. 2012. *Measurement and Verification of Demand Reduction Value from Demand Resources*. Available at: [http://www.iso-ne.com/committees/comm\\_wkgtps/mrktz\\_comm/mrktz/mtrls/2012/apr10112012/a05\\_m\\_mvdr\\_redlined\\_04\\_04\\_12.pdf](http://www.iso-ne.com/committees/comm_wkgtps/mrktz_comm/mrktz/mtrls/2012/apr10112012/a05_m_mvdr_redlined_04_04_12.pdf).

<sup>60</sup> California Public Utilities Commission. 2006. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*. Prepared by: The TecMarket Works Team. Available at: [http://www.calmac.org/publications/EvaluatorsProtocols\\_Final\\_AdoptedviaRuling\\_06-19-2006.pdf](http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf).

<sup>61</sup> NREL. 2013. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures: Chapter 11: Sample Design Cross-Cutting Protocols. Available at: <http://www.energy.gov/sites/prod/files/2013/11/f5/53827-11.pdf>.

<sup>62</sup> State and Local Energy Efficiency Action Network. 2012. *Evaluation, Measurement, and Verification (EM&V) of Residential Behavior-Based Energy Efficiency Programs: Issues and Recommendations*. Prepared by Todd, A.; Stuart, E.; Schiller, S.; Goldman, C.; Lawrence Berkeley National Laboratory. Available at: [https://www4.eere.energy.gov/seeaction/system/files/documents/emv\\_behaviorbased\\_eeprograms.pdf](https://www4.eere.energy.gov/seeaction/system/files/documents/emv_behaviorbased_eeprograms.pdf).

<sup>63</sup> NREL. 2013. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures: Chapter 11: Sample Design Cross-Cutting Protocols. Available at: <http://www.energy.gov/sites/prod/files/2013/11/f5/53827-11.pdf>.

<sup>64</sup> NREL. 2013. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures: Chapter 8: Whole-Building Retrofit with Billing Analysis Evaluation Protocol. Available at: <http://www.energy.gov/sites/prod/files/2013/11/f5/53827-11.pdf>.

<sup>65</sup> For example, if the 90% confidence interval is 50 + 10, the relative precision at 90% confidence is 10/50 = 20%. The half-width is 10, the “+” quantity, since the confidence interval width, from 50-10 to 50+10, is twice this quantity.



- To determine the quantifiable statistical error for quantified Asset Output that is the product of a series of adjustment factors to an *ex ante* estimate, where the factors are all determined from different independent data sets, the following approximation may be used:  
For  $S = A_1 A_2 \dots A_k S_0$ , where  $S_0$  is known (not statistically estimated)  
$$RP(S) \sim [RP(A_1)^2 + RP(A_2)^2 + \dots + RP(A_k)^2]^{1/2}$$
- To determine the quantifiable statistical error for quantified Asset Output of an Asset in which the individual EE Project output estimates are not statistically independent, statistical theory can be used to show that the relative precision at 90 percent confidence is not more than 10 percent (versus determining the exact confidence interval for the sum of estimates). Specifically, statistical theory shows that the relative standard error<sup>66</sup> of the sum is less than or equal to the savings-weighted average of the individual standard errors:<sup>67</sup>

$$RSE(S_{TOT}) \leq \sum_j (S_j/S_{TOT}) RSE_j$$

## 2.5.5 Avoiding Double Counting

### Discussion

Double counting occurs when the Asset Output from a single EE Project are counted more than once. It is critical to prevent this type of error to maintain programmatic integrity and credibility, and to ensure that EE Projects result in real and permanent reductions. Tracking, accounting, and quality checks are steps that are routinely undertaken in states and regions across the country to avoid double counting of EE Projects. The purpose of these steps is to avoid the following circumstances:

- Savings from a single EE Project being claimed by more than one EE Provider. For example:
  - Some or all Asset Output from the same retrofit being claimed both by a residential behavior- based program and a retailer point-of-sale incentive program<sup>68</sup>
  - Asset Output from a single retrofit project being claimed by a utility incentive program and the ESCo that implemented the retrofit
- Two or more EE Projects operating during different years both claiming Asset Output from the same EE Project(s). For example:
  - A 2020 program incenting an LED lamp with a pre-specified EUL of 10 years, with the lamp failing after 2 years and being replaced by a new LED lamp that receives an incentive from another program
- Two or more EE Projects claiming savings that result from interactive effects between EE Projects, as described in [Section 2.5.2](#) hereof, (*Interactive Effects*)
- Inconsistent baselines across a portfolio of EE programs. For example:
  - One EE program claiming Asset Output from enacting a Building Energy Code and Equipment Energy Standard (C&S) with 100-percent compliance that results in Asset Output above a prior C&S or common practice, and another program claiming Asset Output with a baseline defined below the new C&S (e.g., a baseline defined by a prior C&S) for the same types of EE Projects

<sup>66</sup> The standard error of the estimate is a measure of the accuracy of the estimate, and is used to calculate the confidence interval. For large samples under common assumptions, the 90 percent confidence interval is the estimate + 1.645 times the standard error.

<sup>67</sup> For example, suppose the EE Project addresses two EE programs where the Asset Output for program A is 25 percent of the total and has an 8 percent relative standard error, and Asset Output for program B is 75% of the total and has a 4 percent relative standard error. Then the standard error for the sum of A and B has relative standard error less than or equal to  $0.25 \times 8\% + 0.75 \times 4\% = 5.0\%$  of the sum. If the normal distribution applies, the relative precision at 90 percent confidence is then less than or equal to  $1.645 \times 5.0\% = 8.2\%$  percent, so that the requirement for less than or equal to 10 percent relative precision is satisfied.

<sup>68</sup> This potential for double counting is particularly important in the context of randomized encouragement programs, where part of the savings seen in treatment/control differences is due to increased participation in general offering programs.

- A state claiming credit for federal actions such as building code determinations or appliance standards

### *Applicable Guidance*

- Implement systematic tracking and accounting procedures, including the use of well-structured and well-maintained tracking and reporting systems such as those already being used by many states and EE Providers.
- Implement the following procedures to avoid or correct for double counting:
  - For EE Projects with identified consumers, conduct tracking (type and number of EE Projects implemented) at the utility-customer level using customer name, address, account number (where available) and applicable dates for each EE Project.
  - For EE Projects without identified consumers, such as point-of-sale rebates and retailer or manufacturer incentive programs, track applicable vendor, retailer, and manufacturer data. Include the appropriate specifications and quantities of EE equipment sold or shipped.
  - Where practical, such as where multiple EE Providers share a common tracking database, use the consumer-level data to identify and correct for duplicate EE Project records across programs with “trackable” consumers and across non-program projects such as private-sector transactions for projects sponsored by an ESCo.
  - Where it is not practical to identify overlap by matching records from tracking data, conduct surveys to collect information to estimate the degree of overlap.
  - Identify and correct for duplicate EE Project records across EE programs and non-program projects such as private-sector transactions for projects sponsored by an ESCo.
  - Identify instances where tracked consumer activity is likely to be double counted with upstream activity and subtract the estimated overlap from one or the other’s Asset Output claims.
- For EE Projects with identified consumers but without identified equipment or installations (e.g., an information or behavioral program), apply the following steps to eliminate double counting with EE Projects that do not have identified consumers (e.g., upstream programs):
  - Use surveys of the participating and control groups to estimate the extent of incremental non-tracked EE Projects (such as from upstream EE programs) among the participating group.
  - Subtract the output from this incremental non-tracked activity amount from either the informational/behavioral EE program or the upstream program total, or split the amount to be subtracted between the two.
  - See the SEE Action Guide<sup>69</sup> or the UMP protocol<sup>70</sup> for evaluating behavioral programs for further information.

### *NEER as a Tool to Mitigate Double Counting*

The NEER can help to mitigate the potential risks of double counting by supporting robust accountability, attestations and standardized practices.

To register an Asset, a NEER Account Holder (NEER-AH) must demonstrate that they are the EE Provider for the specified EE Project(s). They must show that they have full ownership of all Attributes associated with the EE Project(s), and the ability to adequately measure and report Asset Output from the EE Project(s). The NEER-AH must demonstrate ownership of the EE Project by completing a NEER

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<sup>69</sup> SEE Action. 2012. Evaluation, Measurement, and Verification (EM&V) of Residential Behavior-Based Energy Efficiency Programs: Issues and Recommendations. Available at: <https://www4.eere.energy.gov/seeaction/publication/evaluation-measurement-and-verification-emv-residential-behavior-based-energy-efficiency>.

<sup>70</sup> NREL. 2013. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. Prepared by Cadmus Group. Available at: [http://energy.gov/sites/prod/files/2013/07/f2/53827\\_complete.pdf](http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf).

Attestation of Ownership ([Appendix 6.5.1.3](#)) as part of the online Asset Application ([Appendix 6.5.1](#)). The Attestation of Ownership will be made publicly available.

Assets registered must have 100% of their Asset Output registered in the NEER. EE Providers registering an Asset must submit proof of NEER exclusivity by completing a NEER Attestation of Exclusivity ([Appendix 6.5.1.2 \[a\]](#)), as part of the online Asset Application ([Appendix 6.5.1](#)). The Attestation of Exclusivity will be made publicly available.

## 2.6 Timeframes for Reporting Asset Output and Instrument Issuance

### Discussion

#### Key Terms for Savings Reporting

**Reporting-period incremental savings:** the Asset Output quantified and verified as a result of EE Projects operating for the first time in the reporting period.

**Reporting-period continuing savings:** savings that occur in a particular reporting period as a result of EE Projects implemented in a prior reporting period.

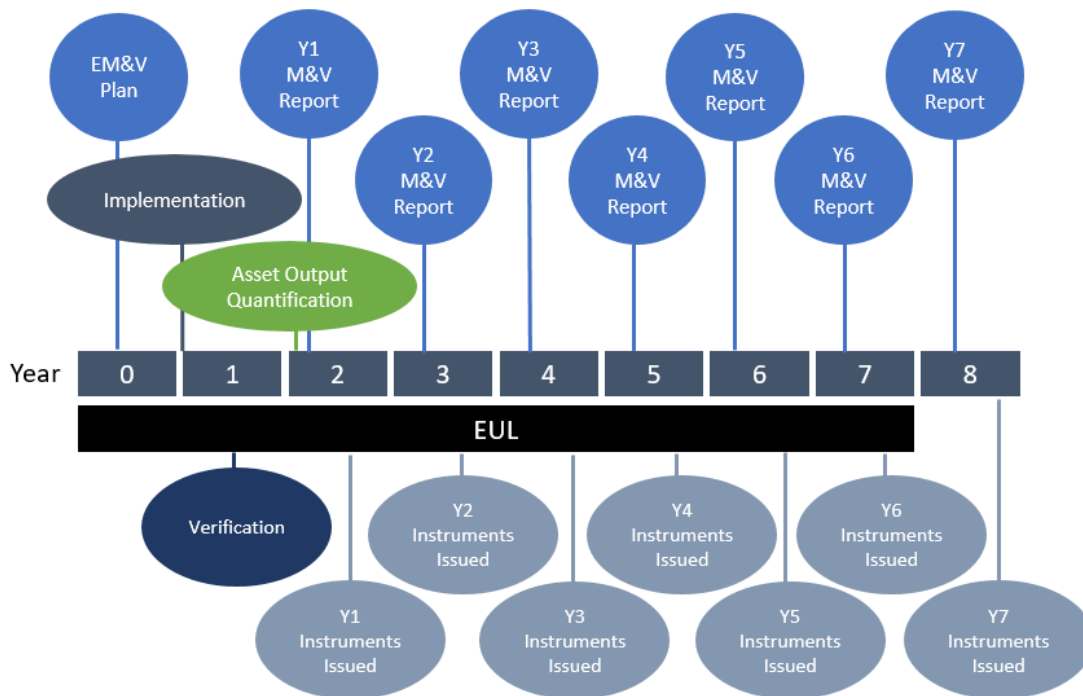
Current practice with utility customer-funded EE programs for reporting Asset Output varies across Client Jurisdictions and EE Providers with regard to the specific content requirements, definitions, and timing. Local policy objectives, the breadth of EE Projects addressed, and other factors typically drive decisions about such reporting considerations. Public utility commissions (PUCs) that oversee such customer-funded EE programs typically set requirements for how to report incremental and also whether to report continuing Asset Output. Other sources of reporting formats and structures apply to projects funded by the Federal Energy Management Program and data reported via the Energy Information Agency's (EIA) Form 861.<sup>71</sup> In the context of *ex-post* reporting to PUCs, EE Providers almost universally quantify Asset Output by applying one of the EM&V methods described above in [Section 2.1](#) hereof.

As an example of how this could work in practice, the figure below presents one possible scenario for Instrument issuance to an EE Provider and shows the hypothetical timeframe from when an EM&V plan is developed to when Instruments are issued.

*Figure 2-2. Illustration of Timeframes from EM&V Plan through Instrument Issuance*

<sup>71</sup> DOE. 2016. *Federal Energy Management Program*. Available at: <http://energy.gov/eere/femp/federal-energy-management-program>. EIA. 2016. Electric power sales, revenue, and energy efficiency Form EIA-861 detailed data files. Available at: <http://www.eia.gov/electricity/data/eia861/>. <http://www.eia.gov/electricity/data/eia861/>.





This example is not intended as a substitute for a thorough review of the applicable NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). In this example:

- The EM&V plan is filed the year before the Year 1 implementation.
- The pre-specified EUL established in the EM&V plan is 7 years.
- The EE Project is implemented in Year 1 (Y1).
- Verification is completed in the same year as implementation.
- Asset Output quantification is completed in Year 2 (Y2), for EE Project completed in Year 1 (Y1).
- Quantified Asset Output for the Y1 activity are submitted in an M&V report in the same year as the completion of the Asset Output quantification. Savings include incremental savings occurring in Y1 from the Y1 program year.
- Instruments are issued for the Y1 activity upon approval of the M&V report in Year 2.
- Instruments for successive years through the EUL are issued at the end of each of Years 3 through 8, after an M&V report is submitted and approved for the previous year based on the M&V report completed in Year 2. Each M&V report includes incremental savings from that year, plus continuing savings in that year from the previous program years. For example, the Y3 M&V report (submitted in Y4), includes incremental savings from the Y3 program year, plus continuing savings occurring in Y3 from the Y1 and Y2 program years.<sup>72</sup>
- No additional Instruments are issued for those EE Projects installed in Year 1 implementation beyond the end of the EUL.

The actual timing will vary across EE Projects and by EE Provider. *Applicable Guidance* is provided below.

<sup>72</sup> This example assumes that the EE Providers submit an M&V report and are issued Instruments one time per year. Note however that the NEER provides for a rolling Instrument issuance process rather than annual issuance.

*Applicable Guidance*

## Considerations for Submitting an M&amp;V Report and Claiming Instruments

- For an ongoing EE Project, submit an M&V report for Instruments for a particular EE Project period's Asset Output only if the EM&V for EE Projects installed in that program period is completed and documented.
- Do not report Asset Output that will occur in a future period, even if the EM&V for the EE Project has been completed and the Asset Output for a future period projected.
- For EE programs that involve the ongoing installation of EE Projects, report both incremental and continuing Asset Output. That is, report incremental Asset Output (the output from EE Projects newly implemented in that period) and continuing Asset Output (the sum of output from previously implemented EE Projects) for each period.
- The Asset Output quantity for a given EE Project for a particular period may vary over the EUL in the following circumstances: if a dual baseline is used, if the Asset is a combination of EE Projects with different EULs, or if the savings change over different periods within the EUL due to factors addressed in [Section 2.3](#) hereof.
- If the EUL is not a whole number, but is a whole number plus a fraction less than one, for the final, fractional part-year quantify the Asset Output as the annual savings times the fraction. For example if the EUL is 6.4 years, in the 7th year the quantified Asset Output will be 0.4 times the annual value for that year.
- If deemed savings values, formulas, or parameters are revised, apply the revisions only to EE Projects implemented after the revisions are formally adopted, not to continuing Asset Output from previously implemented EE Projects.

**2.7 Best Practice EM&V Protocols and Guidelines**

Best practices for quantifying Asset Output is documented in a series of publicly available EM&V protocols and guidelines. As previously noted, these resources are an outgrowth of the utility customer-funded EE programs and private-sector ESCo projects in place in most states across the country. Table 2-4 lists a set of commonly used protocols and guidelines that define, provide instructions for use, and generally govern the application of EM&V methods. Because the protocols and guidelines listed below are not designed specifically for purposes of satisfying the applicable NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)), they should be interpreted and implemented on a case by case basis with consideration of a particular Client Jurisdiction's needs.

*Table 2-4. Examples of Best-Practice EM&V Protocols and Guidelines<sup>73</sup>*

Protocol/Guideline <i>Sponsor</i>	Website	Summary
<b>Federal Resources</b>		

<sup>73</sup> Table 2-4 lists of some of the protocols and guidelines that can be considered best-practice, are publicly available, and have been promulgated and/or adopted by a state, regional, national, or international organization.

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<p>2013 to 2015 Published Protocols of the Uniform Methods Project (UMP) (2013-2016)</p> <p><i>U.S. Department of Energy (DOE)</i></p>	<p><a href="http://www.energy.gov/eere/about-us/ump-protocols">http://www.energy.gov/eere/about-us/ump-protocols</a></p>	<p>Applied protocols for quantifying savings from common EE programs, measures, and technologies based on widely accepted methods.</p>
<p>Uniform Methods Project (UMP) Whole-Building Retrofit Evaluation Protocol. Chapter 8: Whole-Building Retrofit with Billing Analysis Evaluation Protocol (2013)</p> <p><i>U.S. Department of Energy (DOE)</i></p>	<p><a href="http://energy.gov/sites/prod/files/2013/05/f0/53827-8.pdf">http://energy.gov/sites/prod/files/2013/05/f0/53827-8.pdf</a></p>	<p>Applied protocol for quantifying savings from whole-building retrofits.</p>
<p>Energy Efficiency Program Impact Evaluation Guide (2012)</p> <p><i>State and Local Energy Efficiency Action Network - U.S. Department of Energy and U.S. Environmental Protection Agency (SEE Action)</i></p>	<p><a href="https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide">https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide</a></p>	<p>Information resource and guide describing common terminology, methods, and assumptions used to determine electricity savings, avoided emissions, and other non-energy benefits resulting from facility (non-transportation) EE programs.</p>
<p>Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans (2012)</p> <p><i>U.S. EPA</i></p>	<p><a href="https://www.epa.gov/sites/production/files/2016-05/documents/eeermanual_0.pdf">https://www.epa.gov/sites/production/files/2016-05/documents/eeermanual_0.pdf</a></p>	<p>Information resource and guide for incorporating EE and RE policies and programs into State and Tribal implementation plans (SIPs/TIPs).</p>
<p><b>Protocol/Guideline</b></p> <p><b>Sponsor</b></p>	<p><b>Website</b></p>	<p><b>Summary</b></p>
<p>Evaluation, Measurement, and Verification (EM&amp;V) of Residential Behavior-Based Energy Efficiency</p>	<p><a href="https://www4.eere.energy.gov/seeaction/system/files/documents/emv_behaviorbased_eeprograms.pdf">https://www4.eere.energy.gov/seeaction/system/files/documents/emv_behaviorbased_eeprograms.pdf</a></p>	<p>Information resource and guide that describes methodologies for quantifying savings from residential behavior-based EE programs.</p>

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<p>Programs: Issues and Recommendations (2012)</p> <p><i>State and Local Energy Efficiency Action Network - U.S. Department of Energy and U.S. Environmental Protection Agency (SEE Action)</i></p>		
<p>FEMP M&amp;V Guidelines (2008)</p> <p><i>U.S. DOE Federal Energy Management Program</i></p>	<p><a href="http://portal.hud.gov/hudportal/documents/huddoc?id=doc_10604.pdf">http://portal.hud.gov/hudportal/documents/huddoc?id=doc_10604.pdf</a></p>	<p>Applied protocol for quantifying EE savings associated with federal agency performance contracts.</p>
<p><b>Other Resources</b></p>		
<p>International Performance Measurement and Verification Protocol (IPMVP) (2016)</p> <p><i>Efficiency Evaluation Organization</i></p>	<p><a href="http://www.evo-world.org">http://www.evo-world.org</a></p>	<p>Applied protocol for determining savings from EE Projects and measures. The IPMVP does not apply to EE programs consisting of many EE projects or measures.</p>
<p>Regional Technical Forum (RTF) (2016)</p> <p><i>Northwest Power and Conservation Council</i></p>	<p><a href="http://rtf.nwcouncil.org/">http://rtf.nwcouncil.org/</a></p>	<p>Advisory committee established to develop standards for quantifying savings from a wide range of EE projects and measures. The RTF also maintains an extensive and well documented database of deemed savings values.</p>
<p>PJM Manual 18B: Energy Efficiency Measurement &amp; Verification (2015)</p> <p><i>PJM Interconnection</i></p>	<p><a href="https://www.google.com/url?sa=t&amp;rc=t&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;ved=0CB8QFjAA&amp;url=https%3A%2F%2Fwww.pjm.com%2F~%2Fmedia%2Fdocuments%2Fmanuals%2Fm18b.ashx&amp;ei=m9xHVceiEMvJtQXviYD&amp;usq">https://www.google.com/url?sa=t&amp;rc=t&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;ved=0CB8QFjAA&amp;url=https%3A%2F%2Fwww.pjm.com%2F~%2Fmedia%2Fdocuments%2Fmanuals%2Fm18b.ashx&amp;ei=m9xHVceiEMvJtQXviYD&amp;usq</a></p>	<p>Applied protocol for quantifying and verifying the demand reduction value of EE programs, projects, and measures for the PJM capacity market, referred to as the Reliability Pricing Model (RPM).</p>

## National Energy Efficiency Registry Principles & Operating Rules

	<a href="#">=AFQjCNEQb0Z65Y_2ESjIdAP10sPjZb</a>  <a href="#">94Mw&amp;sig2=YdqeCugs2PPnuJTwxmtP_lw&amp;bvm=bv.92291466,d.b2w</a>	
ASHRAE Guideline 14, Measurement of Energy and Demand Savings (2014)  <i>American Society of Heating, Refrigerating, and Air-Conditioning Engineers</i>	<a href="http://www.ashrae.org">http://www.ashrae.org</a>	Applied protocol for quantifying EE savings from EE Projects and measures.
<b>Protocol/Guideline</b>  <b>Sponsor</b>	<b>Website</b>	<b>Summary</b>
ISO-NE Measurement and Verification of Demand Reduction Value from Demand Resources – Manual M-MVDR (2014)  <i>Independent System Operator – New England</i>	<a href="http://www.iso-ne.com/participate/rules-procedures/manuals">http://www.iso-ne.com/participate/rules-procedures/manuals</a>	Applied protocol for quantifying and verifying the demand reduction value of EE programs, projects, and measures for forward capacity market (FCM) administered by ISO- NE.
NEEP Regional-Common EM&V Methods and Savings Assumptions Guidelines (2010)  <i>Northeast Energy Efficiency Partnership</i>	<a href="http://www.neep.org/regional-emv-methods-and-savings-assumptions-guidelines-2010">http://www.neep.org/regional-emv-methods-and-savings-assumptions-guidelines-2010</a>	Information resource and guide that describes best-practice approaches for quantifying gross energy/demand savings and identifying input assumptions for key EE program types.
California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals (2006)	<a href="http://www.calmac.org/publications/EvaluatorsProtocols%5FFinal%5FAdoptedviaRuling%5F06%2D19%2D2006">http://www.calmac.org/publications/EvaluatorsProtocols%5FFinal%5FAdoptedviaRuling%5F06%2D19%2D2006</a>	Applied protocol and guide that documents acceptable EM&V approaches and procedures for quantifying and verifying savings from

California Public Utility Commission	<a href="#">%2Epdf</a>	California's EE programs and program portfolios.
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It should be noted, that while the NEER encourages the use of best-practice EM&V protocols and guidelines, it recognizes that these resources do not provide a step-by-step “recipe” for quantifying Asset Output under the NEER EM&V Minimum Requirements ([Appendix 6.1.1.2 \[b\]](#)). The NEER also recognizes that the application of EM&V protocols and guidelines requires professional judgment and assessment of the EE Projects to determine the appropriate EM&V method and other assumptions to apply. For this reason, the NEER includes provisions to ensure that EM&V plans provide a detailed description of how such protocols and guidelines will be applied.

### 3 Glossary of Terms

This glossary includes only terms that are applied in this *Guidance*.<sup>74</sup>

**Accuracy:** How close an estimate is to the true value it estimates. The term can be used in reference to a point estimate resulting from a sequence of analytic steps, model coefficients, a set of measured data, or a measuring instrument's capability.

**Adoption:** Process and actions required to put a code in place formally, such as a rulemaking process.

**Baseline consumption:** The energy consumption that would have occurred at the baseline efficiency level and operating conditions.

**Baseline efficiency:** The efficiency level that would have been in place without implementation of a specific Energy Efficiency Project.

**Code:** Legal energy efficiency requirements that apply to the design and construction of buildings, usually for new buildings and for renovations and additions to existing buildings.

**Common Practice Baseline (CPB):** The level of energy performance that would occur, in the absence of the Energy Efficiency Project, at the more energy efficient of either: (1) the highest level of energy efficiency required by the applicable federal, state, or local building energy code or product or equipment standard, if any (i.e., the code or standard that corresponds to the lowest energy consumption of the buildings or equipment it applies to, all else equal); or (2) the expected technology, operating conditions, or practices that would have existed at the time of implementation or the likely subsequent replacement within the EUL of the Energy Efficiency Project, in the absence of the Energy Efficiency Project.

**Comparison group EM&V methods:** An Asset Output quantification approach, based on the differences in energy consumption patterns between a population of premises with Energy Efficiency Project(s) in place and a comparison group of premises without the Energy Efficiency Project(s). Comparison group approaches include randomized control trials (RCTs) and quasi-experimental methods using nonparticipants and may involve simple differences or regression methods.

<sup>74</sup> Certain Client Jurisdictions, EE Providers, and other stakeholders may currently apply variations of these terms. For additional information, readers can consult the glossary of the SEE Action EM&V Guide (SEE Action Network. 2012. Energy Efficiency Program Impact Evaluation Guide. Available at: <https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-program-impact-evaluation-guide>).

**Compliance (Code):** Process of meeting the code requirements and demonstrating that these requirements have been satisfied. Compliance is the responsibility of the builder or contractor.

**Conservation voltage regulation (CVR):** An Energy Efficiency Project that produces Asset Output by reducing (or regulating) voltage at the electrical feeder level.

**Deemed formulas:** Pre-specified formulas for calculating savings, using some deemed parameters and some inputs that are specific to each Energy Efficiency Project or measure.

**Deemed parameter values:** Pre-specified values of parameters that are used to calculate output using a deemed formula.

**Deemed savings EM&V methods:** Methods to quantify Asset Output using deemed savings values, or deemed formulas with deemed parameter values.

**Deemed savings values:** Pre-specified estimates of average annual Asset Output for an Energy Efficiency Project.

**Direct measurement and verification EM&V method:** an Asset Output quantification approach that uses onsite observations, engineering calculations, statistical analyses, and/or computer simulation modeling using measurements to determine savings from an individual Energy Efficiency Project.

**Dual baseline (baseline efficiency level):** a baseline corresponding to existing efficiency up to the remaining useful life (RUL) of the existing equipment, systems, or construction, and market/standards efficiency for the remainder of the effective useful life (EUL) of the Energy Efficiency Project.

**Effective useful life (EUL):** the duration of time an Energy Efficiency Project is anticipated to remain in place and operable with the potential to save energy.

**Energy efficiency Project (EE Project):** consists of a combination of multiple measures, technologies, or energy-use practices in a single such end-use, facility, or premises, whereas an energy efficiency program is an organized activity sponsored and funded by a particular entity to promote the adoption of one or more Energy Efficiency Projects or measures across multiple end-uses and facilities.

**Energy efficiency measure (EE measure):** A single technology, energy-use practice or behavior that, once installed or operational, reduces energy usage at a particular end-use, facility, premises, or piece of equipment located behind a retail utility meter at a customer site.

**Energy efficiency program (EE program):** Organized activities sponsored and funded by a particular entity to promote the adoption of one or more Energy Efficiency Projects that, once installed or operational, result in a reduction in the energy use required to provide the same or greater level of service in multiple end-uses, facilities, or premises.

**Evaluation, Measurement, and Verification (EM&V):** The set of procedures, methods, and analytic approaches used to quantify the Asset Output from energy efficiency and renewable energy and other measures, which ensure that the resulting savings and generation are quantifiable and verifiable.

**Evaluation, Measurement, and Verification (EM&V) plan:** An evaluation measurement and verification plan that meets the NEER EM&V Minimum Requirements.

**Ex ante savings:** Projected savings prior to implementation of an Energy Efficiency Project.

**Ex post savings:** Savings determined after implementation of an Energy Efficiency Project.

**Existing efficiency (baseline efficiency level):** The efficiency level of equipment, systems, or construction in place prior to the Energy Efficiency Project.

**Facility:** All buildings, structures, or installations located in one or more contiguous or adjacent properties under common control of the same person or persons.

**Gross savings:** Difference between energy consumption of the affected equipment or facility with versus without the Energy Efficiency Project in place, without consideration of program influence or attribution. Gross savings is calculated relative to a specified baseline determined without regard to program influence.

**Independent variables:** Variables (e.g., weather, occupancy, production levels) that affect energy consumption and savings, and vary independently of the EE Project under study.

**Interactive effects:** Increases or decreases in the use of electric or non-electric energy that occur outside of the end uses targeted by a specific Energy Efficiency Project. For example, reduction in lighting loads through an energy-efficient lighting retrofit can reduce a building's air conditioning and increase heating requirements because less heat is generated by energy-efficient lighting systems compared with less efficient lighting systems.

**Market efficiency (baseline efficiency level):** The average efficiency level of applicable new equipment in the market in place prior to the EE Project.

**Market/standards efficiency (baseline efficiency level):** The higher of standard efficiency and market efficiency in place prior to the EE Project. Use market efficiency if there is no applicable federal, state, or local code or standard or if market efficiency is above standard efficiency.

**Measurement:** (a) The act of metering or monitoring, or (b) a measured or monitored metric (dimension).

**Measurement and Verification (M&V) report:** A monitoring and verification report that meets the requirements of the Dynamic Data QA/QC Module Guidelines ([Appendix 7.2 \[b\]](#)).

**Metering:** The collection of energy-consumption data over time. These data may be collected at the end use, a circuit, a piece of equipment, or a whole building (or facility).

**Monitoring:** The collection of data relevant to how a piece of equipment operates, including but not limited to energy consumption or emissions data (e.g., energy and water consumption, temperature, humidity, volume of emissions, hours of operation) for the purpose of savings analysis or to evaluate equipment or system performance for verification.

**Net savings:** The difference between energy consumption with the program or intervention in place and that which would have occurred absent the program or intervention, accounting for program influence and attribution.

**No operational change (baseline operating condition):** For Energy Efficiency Projects including O&M improvements, the operating conditions that would have existed in the post-intervention period without those O&M improvements.

**Operating conditions:** The conditions in which the Energy Efficiency Project or affected facility or equipment is used or operated.

**Post-completion operating conditions:** For new construction and major renovation that trigger a code requirement, the average operating conditions after the construction is completed and at normal ongoing operations, averaged over the EUL of the Energy Efficiency Project.

**Post-installation operating conditions:** The average operating conditions in the period after the Energy Efficiency Project is implemented, over the EUL of the Energy Efficiency Project.



**Post-installation operating conditions without the add-on or operational improvement:** The average operating conditions in the period after the EE Project is implemented, over the EUL of the Energy Efficiency Project, but without the add-on or operational improvement.

**Random error:** Estimation errors occurring by chance that may cause an estimate (such as an Asset Output value) to be overestimated or underestimated with no systematic tendency in either direction, resulting from uncontrolled and unobservable factors affecting the underlying measurements. The magnitude of random error can be quantified based on the variations observed across different units.

**Reporting-period continuing savings:** Savings that occur in a particular reporting period as a result of Energy Efficiency Project implemented in a prior reporting period.

**Reporting-period incremental savings:** The Asset Output quantified and verified as a result of Energy Efficiency Projects operating for the first time in the reporting period.

**Site inspections:** Site visits to facilities at which an Energy Efficiency Project was implemented. Inspections document the existence, characteristics, and operation of baseline or Energy Efficiency Project equipment and systems and the factors that affect energy use. Inspections may include review of commissioning or retro-commissioning documentation.

**Standards efficiency (baseline efficiency level):** The efficiency level for the most stringent applicable federal, state, or local equipment standard or building code (if any) in place prior to the Energy Efficiency Project.

**Systematic error:** Estimation errors that may cause an estimate (such as an Asset Output value) to be consistently either overstated or understated. Systematic errors (also referred to as bias) may result from incorrect assumptions, a methodological issue, or a flawed reporting system.

**Technical reference manual (TRM):** Resource document that includes information used in program planning and reporting of energy efficiency programs. It can include savings values for measures, engineering algorithms to calculate savings, impact factors to be applied to calculated savings (e.g., net-to-gross ratio values), source documentation, specified assumptions, and other relevant material to support the calculation of measure and program savings—and the application of such values and algorithms in appropriate applications.

**Transmission and distribution (T&D) loss:** The difference between the quantity of electricity that serves a load (measured at the busbar of the generator) and the actual electricity use at the final distribution location (measured at the on-site meter).

**Transmission and distribution measures (T&D measures):** An Energy Efficiency Project intended to improve the efficiency of the electrical T&D system by decreasing electricity losses on the system.

**Underlying equipment efficiency (baseline efficiency level):** For an add-on or operational Energy Efficiency Project, the efficiency of the equipment that the add-on or operational change applies to (without the add-on or operational change). In cases of early replacement, add-on efficiency would be calculated using a dual baseline for underlying equipment efficiency.

**Verification (of EE Project installation):** An assessment by an independent entity to ensure that the Energy Efficiency Project(s) have been installed correctly and can generate the predicted savings. Verification may include assessing baseline conditions and confirming that the Energy Efficiency Project(s) are operating according to how they were designed to operate. Site inspections, phone and mail surveys, and desk review of program documentation are typical verification activities.